The NATIONAL GEOGRAPHIC MAGAZINE

Vol. XVI SEPTEMBER, 1905 No. 9

CONTENTS

	PAGE
Commercial Prize of the Orient. By Hon. O. P. Austin, Chief of the Bureau of Statistics. Illustrated	399
Maps Recently Published by the U. S. Geological Survey	423
Some Notes on the Fox Island Passes, Alaska. By J. J. Gilbert, U. S. Coast and Geodetic Survey	427
A Comparison of Norway and Sweden	429
European Populations	432
Japan and the United States	432
Our Immigration in 1905	434
Exports of Manufactures	434
Statistics of Cities	437
The Commercial Valuation of Railway Operating Property in the United States	438
The Ziegler Polar Expedition	439

Published by the National Geographic Society
Hubbard Memorial Hall
Washington, D. C.

$2.50 a Year REPRINT 25 Cents a Number

Entered at the Post-Office in Washington, D. C., as Second-Class Mail Matter

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THE NATIONAL GEOGRAPHIC MAGAZINE

AN ILLUSTRATED MONTHLY, published by the NATIONAL GEOGRAPHIC SOCIETY. All editorial communications should be addressed to the Editor of the NATIONAL GEOGRAPHIC MAGAZINE. Business communications should be addressed to the National Geographic Society.

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VOL. XVI, No. 9 WASHINGTON SEPTEMBER, 1905

THE NATIONAL GEOGRAPHIC MAGAZINE

COMMERCIAL PRIZE OF THE ORIENT*

BY HON. O. P. AUSTIN,

CHIEF OF THE BUREAU OF STATISTICS AND SECRETARY OF THE NATIONAL GEOGRAPHIC SOCIETY

MY general purpose in this discussion of the commerce of the Orient is to call attention to the extraordinary physical difficulties which have attended efforts of the Occident to cultivate commerce between these two great sections of the world and the difficulties which still exist in the Orient itself, but which are likely to be overcome in the near future. Transportation is to commerce what the breath of life is to the body. Without transportation there can be no commerce. The obstacles to land transportation, which nature had interposed between the Occident and the Orient, in the form of mountain and desert, rendered that commerce extremely small until the application of the compass to ocean navigation enabled man to find an all-water route from the Occident to the Orient.

This was again improved when man learned to apply steam power to transportation upon the ocean, and again when he shortened the route between Europe and Asia by the construction of the Suez Canal; but steamships upon the ocean are of little value without facilities for transporting the products of the interior to the water's edge. These facilities are now supplied in certain parts of the world, especially Europe and the United States, by railways, but they have only recently begun to make their appearance in the Orient. As a consequence, the development of commercial possibilities and commercial power in that section has been delayed, and it is my purpose, in this discussion, to show the progress now being made in developing in the Orient these transportation facilities which have already made commerce great and successful in other parts of the world, and which promise to make it equally important in that great section of the world whose industrious people number more than half the population of the globe.

THE STRUGGLE FOR THE COMMERCE OF THE ORIENT BEGAN THOUSANDS OF YEARS AGO

The commercial prize of the Orient has commanded the attention of the Occident for more than 4,000 years.

*An address to the National Geographic Society, March 30, 1905

Map Illustrating the Obstacles to Land Transportation which Rendered Early Commerce Between Occident and Orient Extremely Difficult

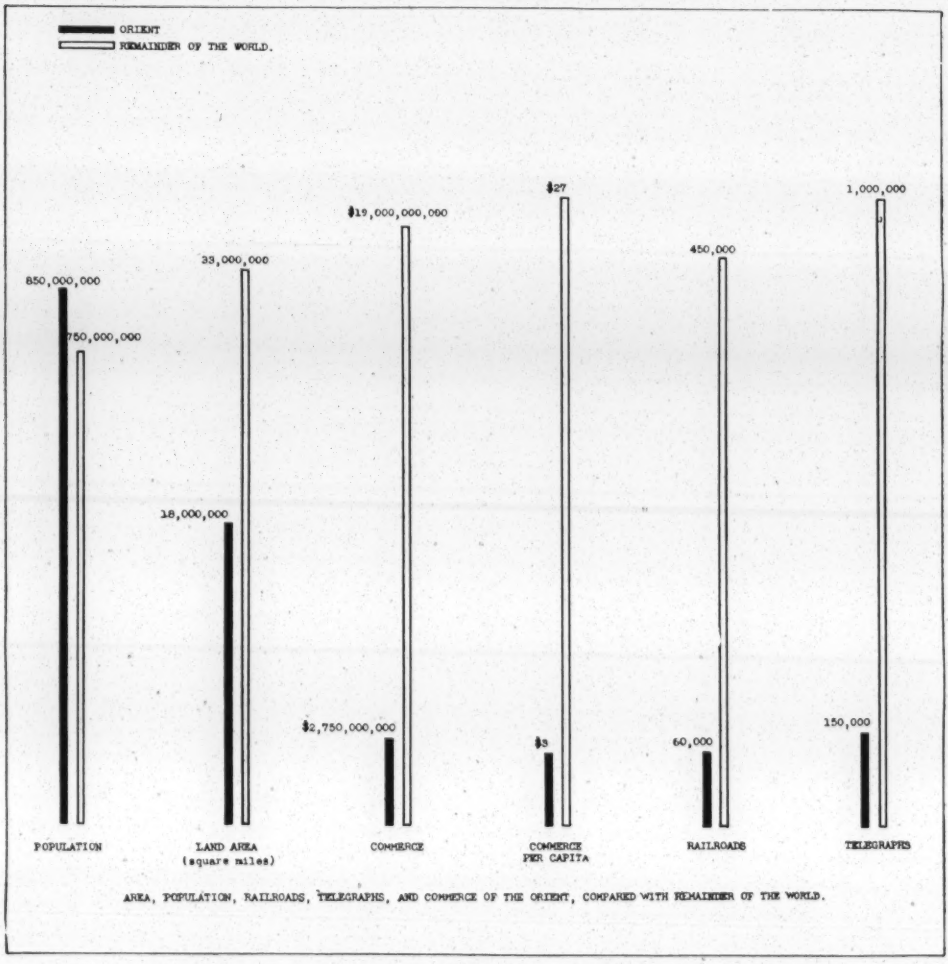
From the earliest dawn of history down to the present hour the over-expanding West has struggled for the control of the commerce of the East. Whether that struggle was against the fierce blasts of the desert, the attacks of the half-civilized tribes through whose territory it must be carried, or the death-dealing cannon, whose thunders are heard around the world today, it has been vigorous, unyielding, continuous; and as civilization has advanced, commerce developed, transportation cheapened, and the wants of man expanded, the importance of this commercial prize has increased until its value has today reached the enormous sum of nearly 3,000 millions of dollars per annum.

In all that time commerce has been the faithful handmaiden of geography. It has explored unknown lands, has learned the value of their products, has formed the acquaintance of the people, has made the ocean its highways and the desert and the mountains its byways, and has been the chief contributor to geographic knowledge of the Orient and the Occident, the temperate zones and the tropics, and even the frozen fastnesses of the Arctics. Whether the search for a route to the Orient was across the deserts of Asia, around the stormy capes at the Far South, or battling with the ice at the North, geography has been the gainer, and the commercial struggles and sacrifices of each generation have contributed to the geographic knowledge of that which followed it.

The earliest record of transactions between men and groups of men shows commerce passing between the Nile Valley, then the Occident of the civilized world, and the Orient, the Euphrates Valley, India, and China. As early as 2,500 years before the Christian era caravans of camels laden with merchandise were passing back and forth across the sandy deserts of Arabia between the Nile Valley at the west and the great commercial cities of Nineveh and Babylon at the east, and these cities in turn had like relations with India and perhaps China. Whether the commerce with China at that early day was by the way of a direct land route from the Euphrates Valley is not clear, but there is at least reason to believe that there were trade routes between India and China, and that the silks and other merchandise of China at the extreme east found their way through India and the cities of the Euphrates to the Nile Valley at the west.

This commerce was, of course, small in quantity as compared with that of today, and consisted only of the easily transported articles. But it was commerce, nevertheless, and one for which men risked their lives, and which then as now contributed to the geographic as well as the commercial knowledge of the world. How the commerce of that period, carried on first by the Arabs across the desert with camel caravans and later by the Phœnicians with their coasting vessels and thence by caravan, compares with that of today, when railroads traverse the land and great steamships plow the ocean, may be worth a moment in passing. The land commerce of that period was carried by camels, of which it would require 5,000 to carry as much as one modern train of cars, while the water-borne commerce was in oar-propelled vessels, of which it would require 300 to carry as much as a single modern steamer of today.

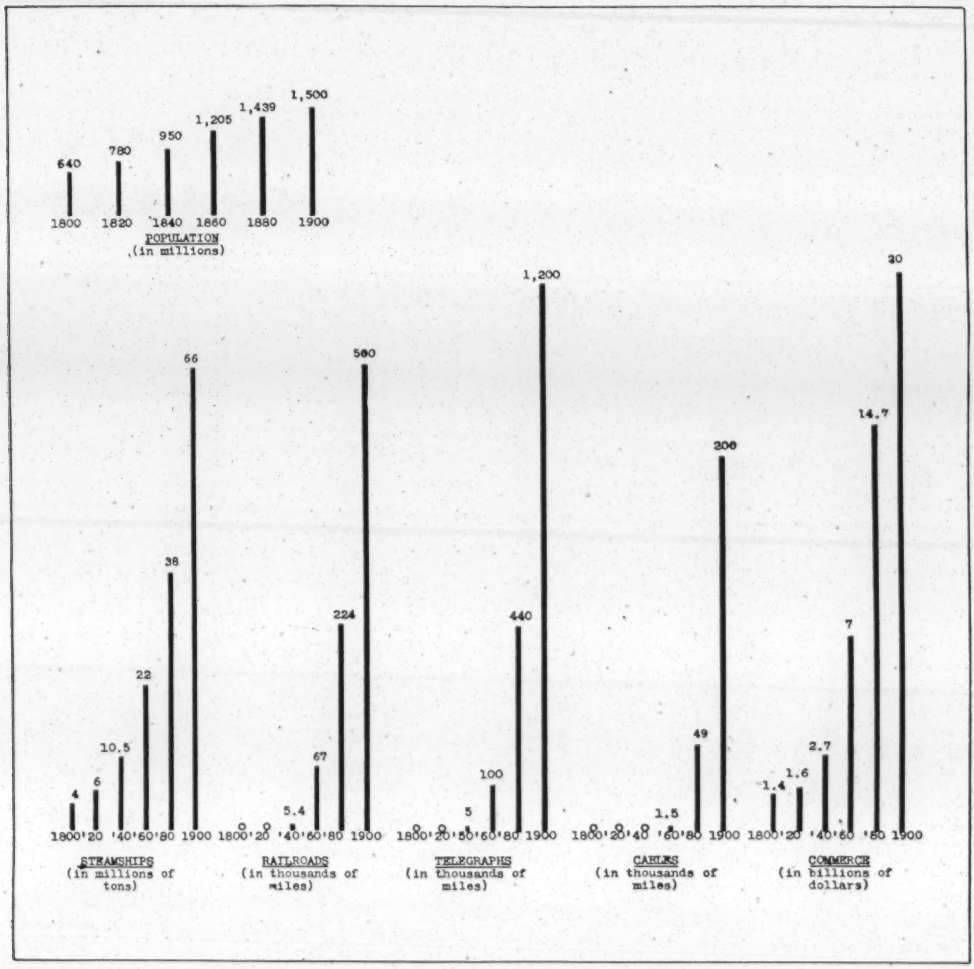
Even a thousand years later the caravans, which made their way from the shores of the Mediterranean to China, occupied more than one year in the round trip, while the vessels, which had then begun to utilize sails in conjunction with oars, still hugged the coast and traveled only by day, and in their long voyages were sometimes compelled to halt for months at a time while the occupants replenished their supplies of food by sowing, cultivating, and reap-



The Growth of the World During the Nineteenth Century

ing a crop on some favorable shore, after which they passed on and completed their round of commercial transactions. But even these adverse conditions did not deter the Occident from continuing its trade with the Orient, and as the Occident expanded still farther to the west trade grew and the area of commerce expanded until the tin of the British Isles, the amber of the Baltic, the silver of Spain, and the purple cloths, the glass, and other manufactures of Tyre and Sidon became a part of the commerce which the Phœnicians and Carthagenians carried to the Orient.

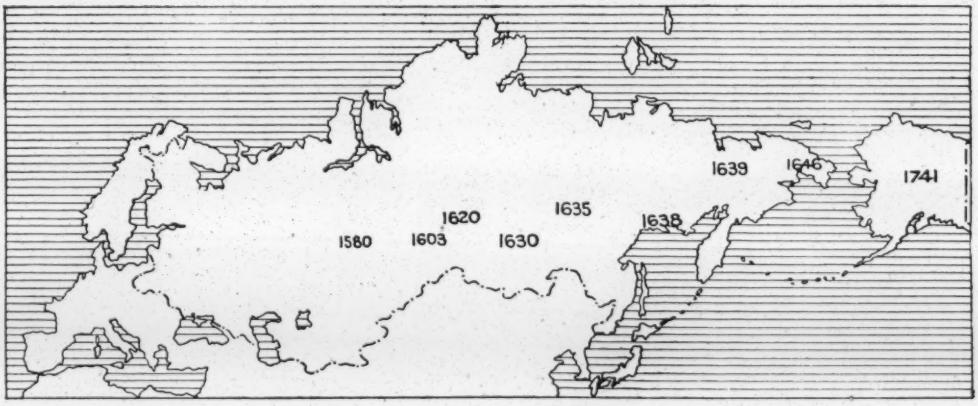
The establishment of governments over the great area east of the Mediterranean encouraged the development of commerce. The Persian Empire, with its satrap system of government, its post-roads, and the metallic currency



A Comparison of the Orient and the Remainder of the World in Area, Population, Railroads, Telegraphs, and Commerce. See page 412

which it introduced, aided commerce and extended geographic knowledge.

With the conquests of Alexander, by which his empire was extended to India, came a more intimate knowledge of the Orient and its wonderful commercial possibilities, and the ivory, the fine woods, the spices, the jewelry and precious stones of that section, and the silks and other products of China which then reached the markets of India were freely exchanged for the cloths and furs and tin and silver and amber of the Occident. Yet the slow rate of travel, and therefore of commercial and geographic research, even at that time, is shown by the fact that the return of that portion of Alexander's forces which traveled by sea from the mouth of the Indus to the head of the Persian Gulf and thence to

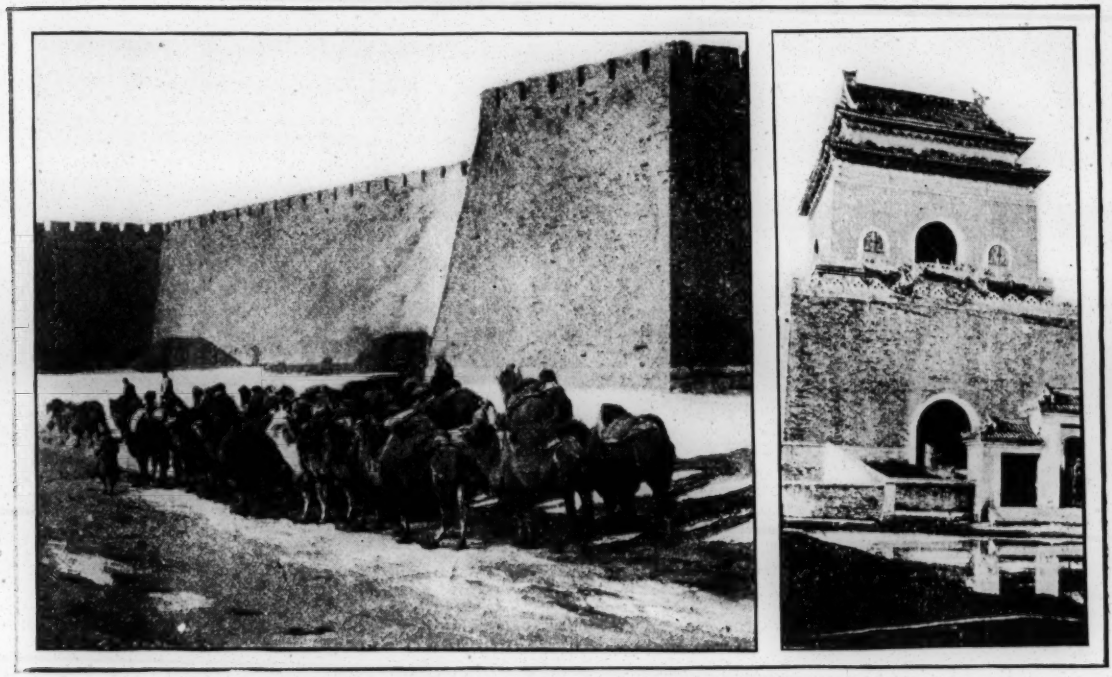


The Successive Advances of Russia to the Pacific. See page 410

Susa occupied nearly a half year of time.

The next great extension of the commerce of the West with the East was that developed by the Romans. While they were not a commercial people in the generally accepted sense of the word, the fact that they were compelled to supply the wants of the luxurious element of a city having more than one million people led them to cultivate a much greater trade with the Orient than had been ever before known. Their area at the west and north extended to the Atlantic and the British Isles, and at the south included the coasts of Africa, and on the east touched the Red Sea and the Persian Gulf, through which they had ready access to India. Their vessels were a considerable advance upon those of the Phœnicians, though still propelled in part by oars, and a large trade was carried on with India, extending to Ceylon, where exchanges of merchandise were made with coasting vessels from China. This trade was chiefly in the luxuries which India could supply to the wealthy Romans, and it is stated that the silk brought from China was considered worth its weight in gold, and that as much as $240,000 was paid for a single pearl from India. The chief articles drawn from the Orient by the Romans were cotton goods, silks, ivory, carvings, spices, incense, perfumes, ointments, jewelry, pearls, sapphires, and diamonds, and the articles sent in exchange included woolen and linen cloths, glass, tin, wines, and gold and silver.

Even the darkness of the middle ages did not terminate the commercial relations of the Occident with the Orient. The great commercial city of Venice, which sprang into existence with the decadence of the Roman Empire, developed a trade with the Far East which surpassed that of any of its predecessors. Its ships sailed at regular intervals for Alexandria and the eastern ports of the Mediterranean and Black Seas, accompanied by fleets of war vessels for their protection. The merchandise passing to and from the Orient was in part sent overland from the Mediterranean to the Red Sea or the Persian Gulf, and thence eastward by water and in part by the land routes east of the Mediterranean and Black Seas. A consular system established by the Venetian government helped in developing trade abroad and in the distribution of geographic information, and commerce extended not only eastward, but also to the north and



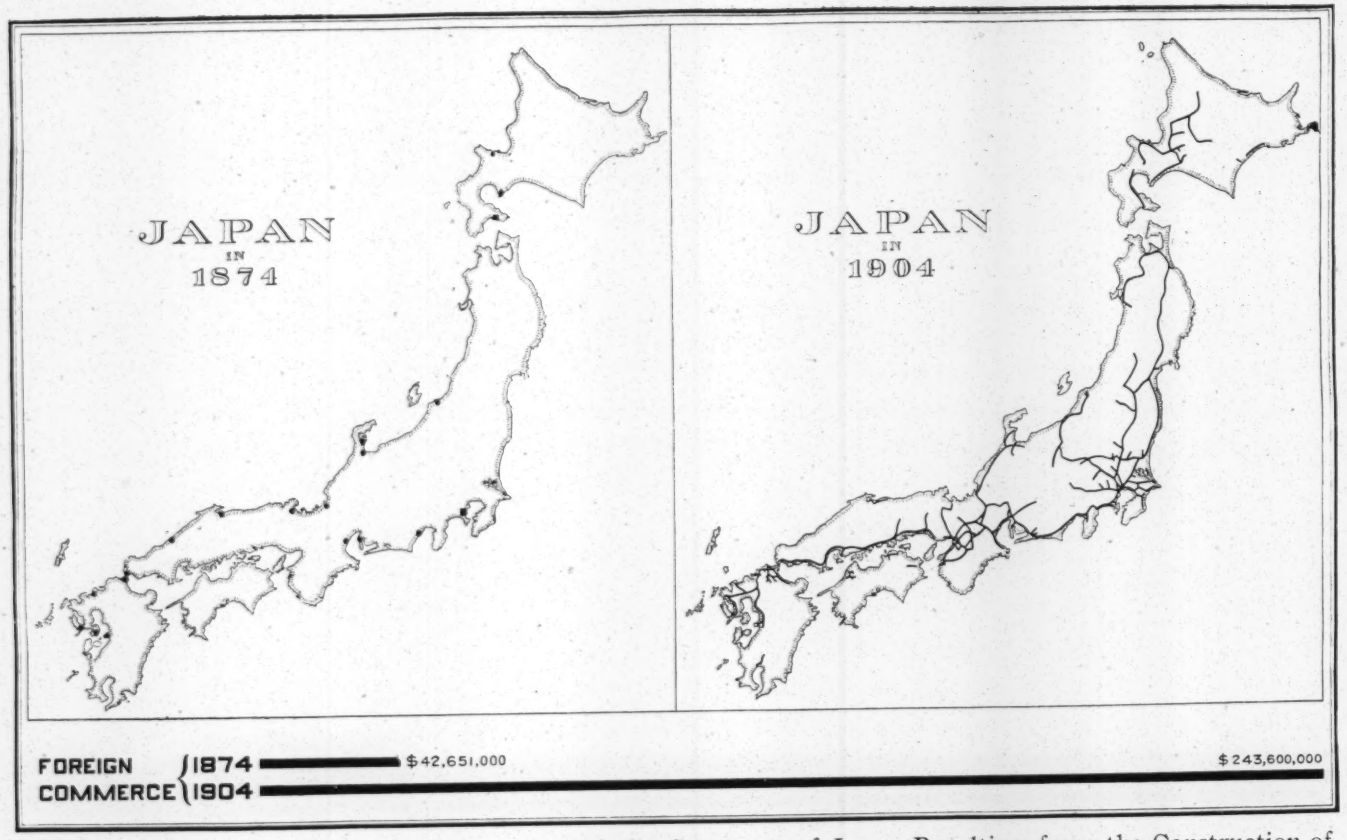
From "China's Open Door," by Rounsevelle Wildman. Copyright, 1901, Lothrop Publishing Company

Transportation in China. Camel Train Outside the Pekin Wall Military Gate

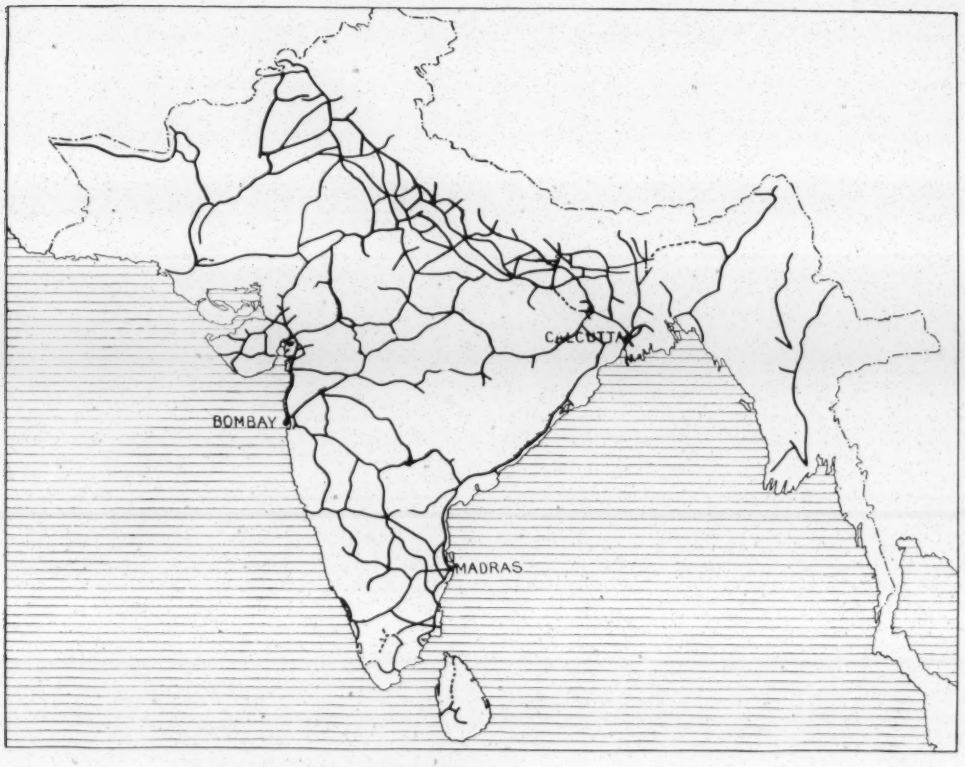
A modern train of cars carries as much as 5,000 camels

west, part of the trade for northern Europe going by the way of the Mediterranean and Atlantic and a part by land by the way of Nuremburg, Leipzig, Cologne, and other cities of the interior.

While all this was happening there came out of the Orient itself a movement which resulted in a great enlargement of the trade with that section. It was the one occasion, prior to the second half of the century just ended, in which the Orient has shown a disposition to extend its trade relations with the Occident. The Mohammedan Empire, originating in the western part of that section which we still designate as the Orient, expanded rapidly in all directions until its boundaries reached the Atlantic Ocean on the west and India and China on the east, while its influence extended even farther eastward. This of itself might not have been of such material importance, but when it is considered that the Mohammedans were naturally a commercial people, and that Mohammed himself commended commerce and agriculture as "both meritorious and pleasing to God," it is not surprising that their area of control and influence stimulated commerce between Europe and the most distant parts of the earth. The products of Spain, Barbary, Egypt, Abyssinia, and southern Russia were carried from the West to Mecca, Damascus, Aden, and other cities of the East, and were there exchanged for the products of Persia, India, China, and the islands of the Indian archipelago. Slaves, tiger skins, cotton



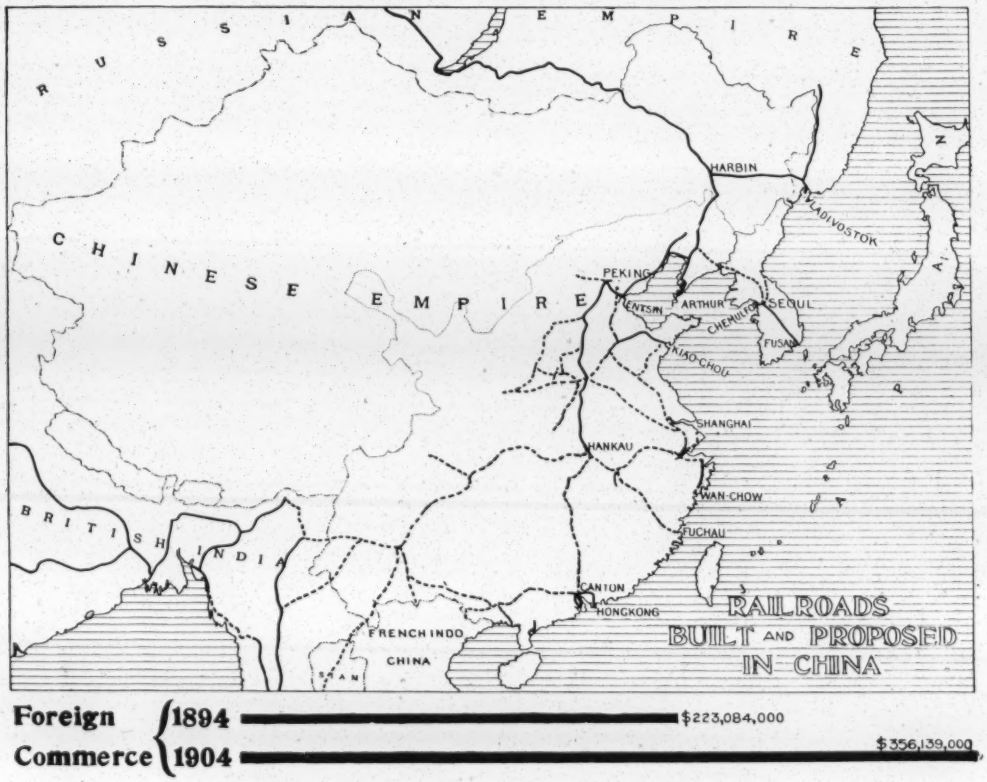
An Illustration of the Enormous Development of the Commerce of Japan Resulting from the Construction of Railways. See page 416



The Network of Railroads Covering India Today and the Resultant Vast Increase in Her Commerce. See page 416

goods, ivory, and gold dust came from Africa; leather, tapestry, cloths, copper, and iron from Spain and the adjoining territory, and these were exchanged at the points already mentioned for the silks, and spices, and woods, and carvings, and pearls, and precious stones from India and China.

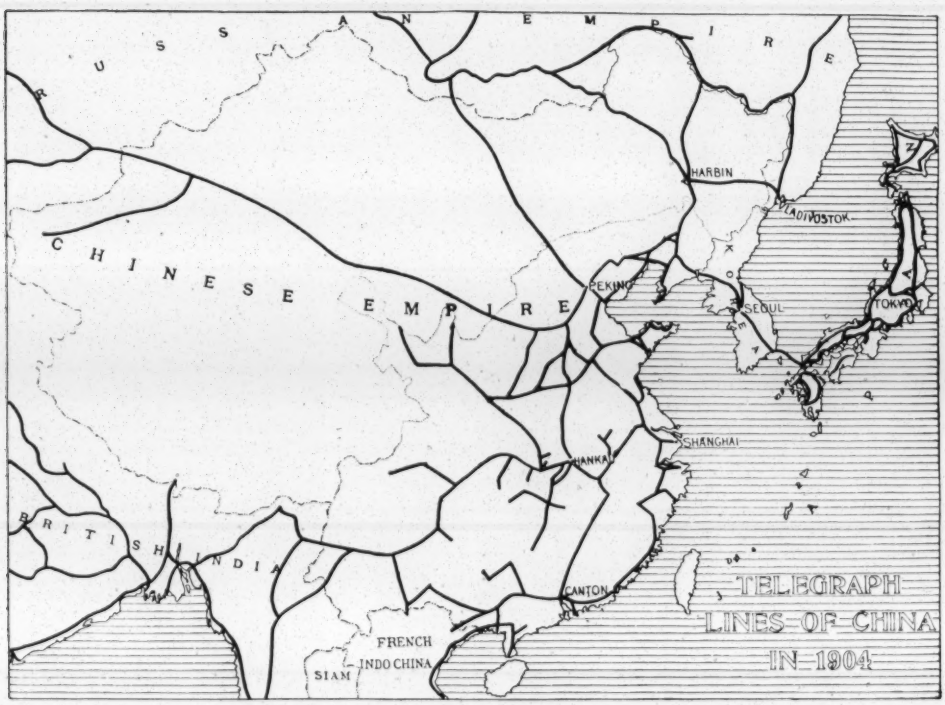
But the most important result to commerce and geography of this temporary extension of Oriental influence into the Occident was the acquaintance which it gave to the west with that important device of the Far East, the mariner's compass. While doubts have been expressed as to the origin of the compass, it is believed that it was developed by the Chinese many centuries before it was known to the West, and used in the desert by the Arabs, and that it was certainly introduced to the Europeans by the Mohammedans during their control of the countries fronting on the Mediterranean. Whatever its origin, its introduction in the West revolutionized conditions of commerce, navigation, and geographic knowledge. The ocean, formerly considered a barrier to com-



Railways Constructed and Proposed in China

merce and exploration, became at once its highway. It gave a new stimulus to the efforts to find an all-water route by which to reach the commercial prize of the Orient, and the result was, first, the discovery of the American continent, and a little later two all-water routes to the very doors of the Orient, one of these by the Portuguese, around Africa and across the Indian Ocean, and the other by the Spanish, around South America and across the Pacific.

But the knowledge that the Orient could be reached by sailing around the continents at the south did not satisfy the people of northern Europe. The Portuguese, as the first explorers of the Indian Ocean, claimed the exclusive right of navigation in those waters, and the Spanish claimed a similar monopoly of the waters south of the American continents. As a result, the English and Dutch devoted their attention to efforts to find other water routes to the Orient, along the northern coasts of the continents of America and Eurasia. The Dutch sent expeditions to fight their way through the ice along the northern coasts of Europe and Asia; and England sent vessel after vessel to explore the northern coast of North America, each in the vain hope of finding a passage to China. For years the merchants of northern Europe waited in vain for the opening of a northwest passage to the Orient, until it finally



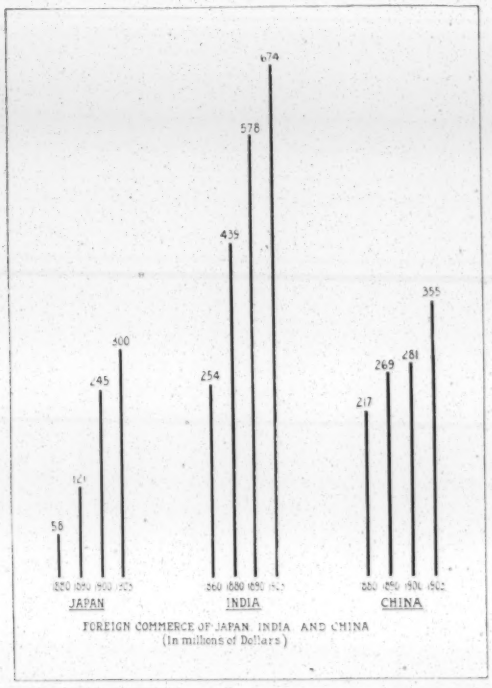
Telegraph Lines of China in 1904

became apparent that the water route to the Far East lay at the south only.

Finally, the theory of Grotius, that the high seas should be open to the vessels of all countries, prevailed, and then the struggle among modern nations for the commercial prize of the Orient was renewed with a vigor, greater, if possible, than ever before. Ships came and went at will over all seas and in all directions Great commercial companies were formed and chartered by their respective governments, their purpose being to trade with the Orient, and they gradually established trading stations on the coasts of India, China, and the islands of the East Indian archipelago. The commerce by way of the Mediterranean and the caravan routes rapidly declined, and sailing vessels from the countries of western Europe landed their merchandise and silver and gold at the doors of the Orient, and returned laden with silks, and ivory, and woods, and spices, and with many other articles of the Orient formerly considered too bulky for transportation by the caravans of earlier centuries.

It may be interesting to pause for a moment here to study the cause of the anxiety of western men to find and maintain an all-water route to the Orient. Of course, the mere contrast of the cost of transportation by water with the cost on land was of itself of great importance, and especially at that time, when there were no railways, but there were other reasons. The land routes between western Europe and the Orient were extremely difficult. At the north the Ural Mountains interposed an almost impassable barrier; in the central region a

great desert stretched almost continuously from the Mediterranean to India and China, and threatened the lives of men and animals which invaded it. At the south of that desert was that impassable mass of mountains known as "The Roof of the World"—the Himalayas.



A Comparison of Japan, India, and China Today. See page 416

RUSSIA AN EARLY ARRIVER IN THE ORIENT

Only by working through the passes in the Ural range and thence crossing the trackless wilds of Siberia was it possible for Europeans to reach the Orient by the land route; and it was by this route that one nation did find its way by land to the Far East, while the others were relying upon the water route. That nation was Russia. We are accustomed to think of Russia as a newcomer in the Orient, but in fact it was earlier in that field—much earlier than is realized by many who have but casually read the history of that persistent people. Even before the discovery of America the Russians were looking over the Urals toward the east and making short incursions into the territory which they were destined to occupy. By the year 1580 they had established permanent settlements in the eastern part of what is now known as Siberia. By 1620 they were half way to the Pacific; by 1638, only eighteen years after the Pilgrim Fathers landed at Plymouth Rock, they had actually established themselves on the Pacific coast; by 1741 they had crossed Bering Sea into northwestern America, and before the adoption of our Constitution they had established a permanent settlement in Alaska, where they remained until the purchase of that territory by the United States, in 1867.

But beginning with the middle of the last century there came a new and marked development of the commerce of the Occident with the Orient. Prior to 1842 all trade in China was carried on through the "Hong merchants," designated by the Chinese government as intermediaries for trade with foreigners.

In 1842 the British government, through what is known in history as the "opium war," forced the Chinese government to open five ports to the trade of its vessels, and two years later similar privileges were given to the United States, and shortly thereafter to other countries, and these "treaty ports" have been increased from time to time until they now number about forty. In 1854 Japan, upon the insistence of the United States, opened its doors to our commerce, and a little later to other countries of the world. In 1858 the British government took the entire control of India and began the

work of developing its commerce by constructing canals, roads, and railroads. In 1869 the Suez Canal was opened, shortening by several thousand miles the water route between the Occident and the Orient.

But there are other great changes during the century just ended which had an equally important effect upon the commerce of the whole world and upon the exchanges between the Orient and the still expanding Occident. Prior to 1800 most of the manufacturing of the world was still performed by hand, and largely in the household. Now machinery, driven by steam or the power of the waterfall, performs, under the guidance of a single individual, tasks which would have required hundreds of persons to perform a century ago. Then the products of the interior could only be carried to the seaboard by man or animal power, or at the best by floating them in oar-propelled boats upon the streams which made their way to the ocean. Now railways penetrate all parts of the great interior and carry the natural products to the water's edge for exchange with other countries and continents. At the beginning of the century all exchanges between the continents were carried by slow sailing vessels, whose carrying capacity was small and danger of loss great. Today the bulk of the international commerce is carried by great vessels propelled by steam, and the cost of transportation is reduced to a small fraction of that of a century ago. In 1800 there were no methods of communication on land save by the post-rider, and none on the ocean other than that furnished by the slow sailing vessel, whose speed was subject to the caprices of nature as expressed in winds or storms or calms.

THE POSSIBILITIES OF COMMERCE HAVE BEEN MULTIPLIED BY INVENTIONS

Today the producer at the most interior point of the Occident may speak with the consumer in the distant Orient, the message flashing across the land and under the ocean in less time than is required to describe the process. The merchant of New York who a century ago sent his order to China by sailing vessel might consider himself fortunate if he received the merchandise within a full year, while now the dealer in the most distant city of our great interior may wire his order in the morning with the knowledge that the goods may before night be placed on board a fast steamer and reach him within less than a month.

In 1805 the world had not a single steamer upon the ocean, a single mile of railway on land, a single span of telegraph upon the continents, or a foot of cable beneath the ocean. In 1905 it has over 18,000 steam vessels, 500,000 miles of railway, and more than 1,000,000 miles of land telegraph, while the very continents are bound together and given instantaneous communication by more than 200,000 miles of ocean cables, and the number of telephone messages sent aggregates 6,000 millions annually, and one-half of them in the United States alone.

The effect of this enormous increase in the power of production, transportation, and communication has been to multiply commerce in all parts of the world. The world's international commerce, which a single century ago was less than two billions of dollars, is now 22 billions, and the commerce of the Orient, which was less than 200 million dollars, is now nearly 3,000 millions.

THE COMMERCE OF THE ORIENT IS INSIGNIFICANT WHEN COMPARED WITH THAT OF THE REST OF THE WORLD

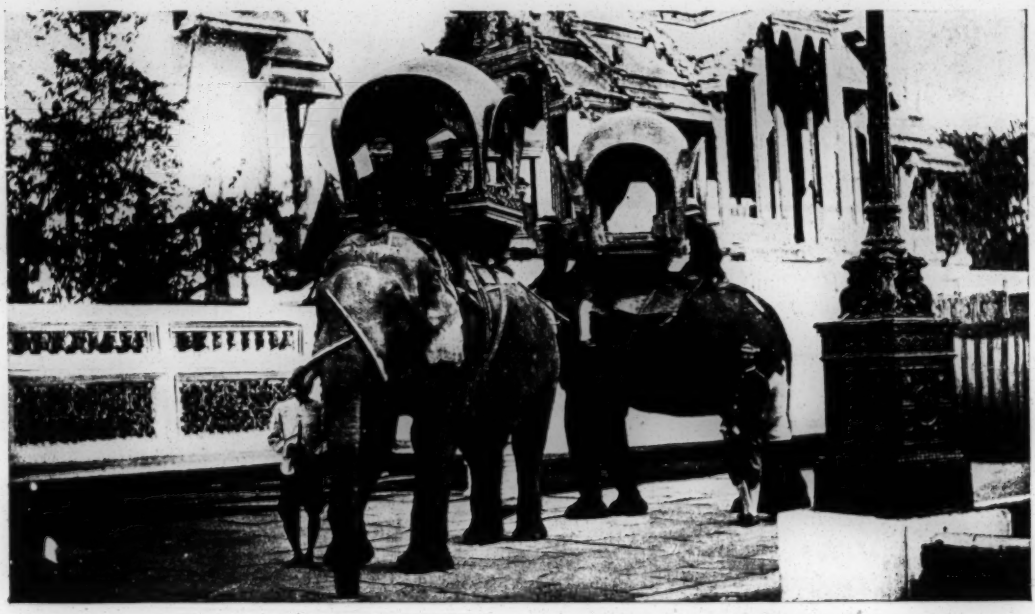
But this commerce of the Orient, amounting to nearly 3,000 millions of dollars annually, is yet small when compared with its area and population, and

thus its possible producing and consuming power. The population of Asia and Oceania is 850 millions, while that of all other parts of the world combined is but about 750 millions. Its land area is 18 million square miles, and that of all other parts of the world 34 millions; yet its commerce is slightly less than three billions of dollars, and that of other parts of the world 19 billions. This gives an average commerce in the entire Orient of about three dollars *per capita* per annum, while the average in all the rest of the world combined is 27 dollars *per capita* per annum. Thus the Orient, which has more than one-half of the world's population and more than one-third of its land area, has now but one-ninth as great as the average *per capita* in all other parts of the world combined.

THE ORIENT HAS BEEN HANDICAPPED BY LACK OF MEANS OF TRANSPORTATION AND COMMUNICATION

Now, what is the cause of this lack of commercial development in the Orient? With half the world's population and all the attention which the world has given it during the past four thousand years the commerce is yet but one-eighth of the total world's commerce and one-ninth as large *per capita* as that of the remainder of the world. While its growth, considered by percentage of increase, has of late been as rapid as other parts of the world, its total, when considered from the standpoint of area, population, and producing and consuming possibilities, is ridiculously small.

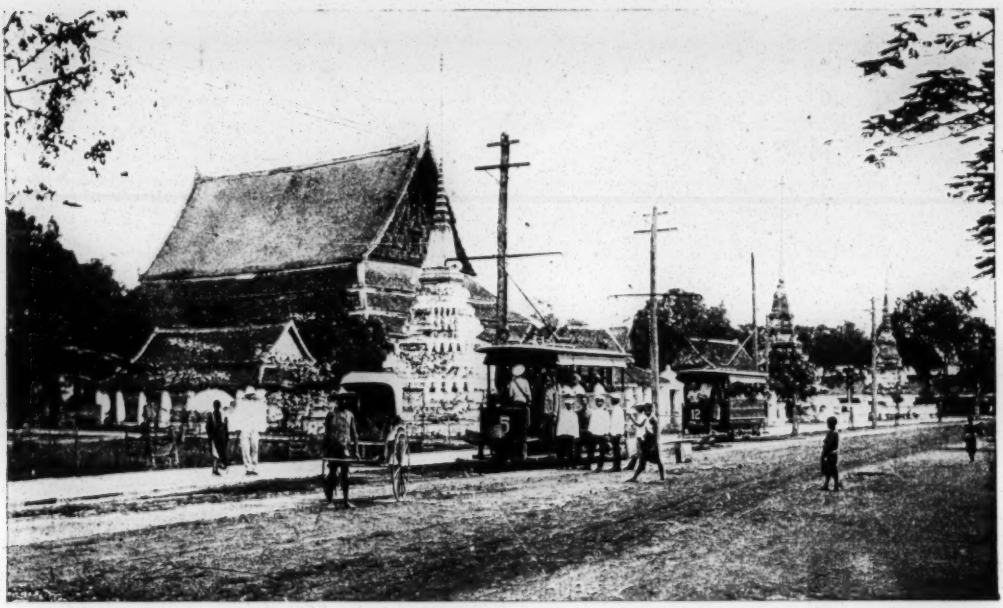
What is the cause of the slow commercial development of the Orient?



From "Kingdom of Siam." Copyright, 1904, G. P. Putnam's Sons

Elephants with Howdahs (Bangkok), which Have Been Eclipsed in Popularity by the American Trolley Car on Opposite Page

Can that condition be overcome by the application of those agencies which have caused the greater and more rapid development in other parts of the world? The answer to these questions is not difficult. The world's commerce has developed in conjunction with and as a result of the development of facilities of transportation and communication. Without steam power for transportation and electricity for communication



From "Kingdom of Siam." Copyright, 1904, G. P. Putnam's Sons

Bangkok Tramway

the world had but a single century ago less than two billions of international commerce. Now, with the steamship and railways and telegraphs, it has over 22 billions. Of this growth of over 20 billions in the last century but little more than two billions occurred in the Orient and about 18 billions in other parts of the world. What is the cause of this great disparity of growth? A glance at a map of the world, showing the facilities for transportation and intercommunication in its various great sections, will, in some degree at least, answer this question. Where it is, of course, practicable for the progressive, commercial people of the Occident to send their steamships to the doors of the Orient in pursuit of the commercial prize of that part of the world, the Orient itself cannot send its products from the great interior to the ocean ports without railroads; and here is at least a partial answer to the question. That section of the world which we are considering as the Orient, while it has more than one-half of the population and one-third of the land area of the world, has but about one-tenth of the world's railways and less than one-tenth of its telegraph lines. Can there be any doubt that this is at least one of the great causes of the fact that it has

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The Awakening of the East. A School for Girls, Bangkok

but one-eighth of the world's commerce? The people of the Orient are, as a rule, industrious, painstaking, and now disposed to commercial intercourse with the Occident, but without facilities for transporting their products from the interior to the seaboard, where they may sell or exchange them for products of the other parts of the world, they are powerless to develop a great commerce.

THE RECENT DEVELOPMENT OF INDIA AND JAPAN COMPARED TO THAT OF CHINA

It is apparent, from this comparison of the railways and telegraphs of the Orient with those of the Occident, that the small *per capita* of commerce in the Orient is due, in part at least, to the lack of facilities for transportation and communication on land; and there is a means by which this theory can be tested. There are, in the Orient, two countries which have been sufficiently supplied with railways in recent years to enable us to determine, with some degree of accuracy, their effect upon Oriental commerce. While their railway mileage is yet small in comparison with that of the great commercial countries of the Occident, it is sufficient to justify a momentary study as to the growth of commerce which has followed that development. These two Oriental countries in which railroads have developed, or at least began to develop, are India and Japan. India has about 28,000 miles of railway and Japan about 4,500 miles. True, these countries in each case have but about one mile of railway for each 10,000 inhabitants, while in the United States we have one mile for each 400 inhabitants, yet the contrast in the commerce of

From "An American Engineer in China," by William Barclay Parsons
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A Group of Chinese Watching an American Railway Engineer

Japan and India, when compared with that of other Oriental countries having practically no railways, is at least suggestive as to the effect of railways upon commercial development.

The three great countries of the Orient are China, India, and Japan. They have about nine-tenths of the population of what is generally known as the Orient, and the relative development of commerce among these three great groups of Oriental people which are or are not supplied with railways should be at least suggestive as to the effect of railways upon commerce and commercial growth. Railway construction in India began about 1853, but did not make rapid development until more recent years. In Japan railway-building began about 1872, but most of the development has occurred during the past decade. In China nearly all of the railway now existing has been constructed since 1900, and under circumstances which have not permitted its development as a system which would have material effect upon commerce. We may, then, fairly compare the growth of commerce in these three great Oriental countries, two of them with young but rapidly developing railway systems, the other with practically none.

The foreign commerce of China, with its 400 million industrious people, but no railways, has grown but 160 million dollars since 1870; that of India, with 300 millions of people and a system of railways, has grown 258 millions, and that of Japan, with only 45 millions and a system of railways, has grown 215 millions. The Chinaman is known by those familiar with the conditions in the Orient as a natural trader and business man. A large share of the trade in the Orient is in the hands of the Chinese, and the positions of trust in the great

banking establishments are largely held by Chinamen, yet, despite these commercial characteristics of the Chinamen, the foreign commerce of China, with no railway system, is but 85 cents *per capita;* that of India, with 28,000 miles of railways, is about $2.25 *per capita*, and that of Japan, with 4,500 miles of railways, is $5.86 *per capita*. In other words, the commerce of China, without a system of railways, is about one-third as much *per capita* as that of India and one-sixth as much *per capita* as that of Japan, each of which has one mile of railway for each 10,000 inhabitants.

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Transportation in China

Junks on the Han River with Hankow in the Distance

PROJECTED RAILWAYS IN THE ORIENT

But there is another feature of this recent railway development in the East which must be considered as likely to prove of great importance in the future relations of the Orient with the Occident. China has 2,000 miles of railway, most of it connected with the great Trans-Siberian line, and several thousand miles more have been authorized or definitely proposed. French Indo-China, lying just at the south of China, has over 1,000 miles constructed and many new lines projected, while the Malayan Peninsula, still farther at the south, has some 300 miles, Siam about 350 miles, and Burmah 1,500 miles. The French Indo-China system is to be connected with the railways of China by a line 230 miles long, now under construction, at a prospective cost of some 20 million dollars. The railway lines under construction or projected in China promise to extend to her southwest border, where a few hundred miles of railway would connect them with the systems of Burmah, which in turn will connect with that of India, about 28,000 miles in length. From India the railway system again stretches westward into Persia, and the construction of but a few hundred miles would put this great system into communication with the 2,000 miles of road in Asiatic Turkey, which in turn connects with the railways of southern Europe, while a comparatively short stretch of road at the north of India would also connect the Indian railway system with that of Russia. While it is a fact that serious political obstacles to some of these unions of railway systems now exist, it is not unlikely that the demand of commerce will in time be sufficiently strong to overcome or sufficiently modify these political conditions to render possible a union of these numerous systems, great and small, so far as relates to an interchange of passengers, freights, mails, and the establishment of other transportation

systems between the railroads of Europe and those of Asia. Already the great Siberian Railway connects the system of Europe with that of China at the north, and, now that the construction of a few short links would furnish another continuous line from China to Europe at the south, we may confidently expect that the traveler may, within a comparatively few years, make the entire circuit of Eurasia by rail, traveling comfortably from Paris through the countries of northwestern Europe, Russia, and Siberia, into China, and thence southward through Indo-China, Burmah, India, Persia, Turkey, and the countries of southern Europe to the place of starting. The development which would come to the commerce of Europe with the Orient through the operation of this great railway circuit of the Eurasian continent could but be of great importance.

While it is a fact that the Orient, with more than half of the world's population and one-third of its land area, has now but one-tenth of its railways and telegraphs, and one-eighth of its commerce, we are not justified in considering its commercial prize as of little value, present or prospective. The total commerce of Asia and Oceania, which we may broadly consider under this title, is nearly three billions of dollars, about equally divided between imports and exports, and its percentage of growth, even with the limited railway facilities offered, has been quite as rapid in recent years as that of the more favored Occident. The commerce of India is four times as great as when its railway system was begun, and that of Japan is six times as great as at the beginning of the construction of its railroads, and we may therefore expect that the development of the great railway systems now projected in China, Korea, Indo-China, Siam, Burmah, Malayan Peninsula, the Dutch East Indies, and the Philippines, with the additions planned for India, Japan, Siberia, and Australia, will enormously increase the commerce of that part of the world.

The imports of all the countries and islands of Asia and Oceania now amount

From C. L. Marlatt, Department of Agriculture

On One of the Interior Canals of China

From C. L. Marlatt, Department of Agriculture

Transportation in China. A Country Cart

to nearly as much as the total exports of the United States. At present we supply but about 8 per cent of that great importation, and it needs but a moment of reflection to realize what an addition it would give to our foreign trade if we could treble or quadruple our shares in the growing imports of that great section.

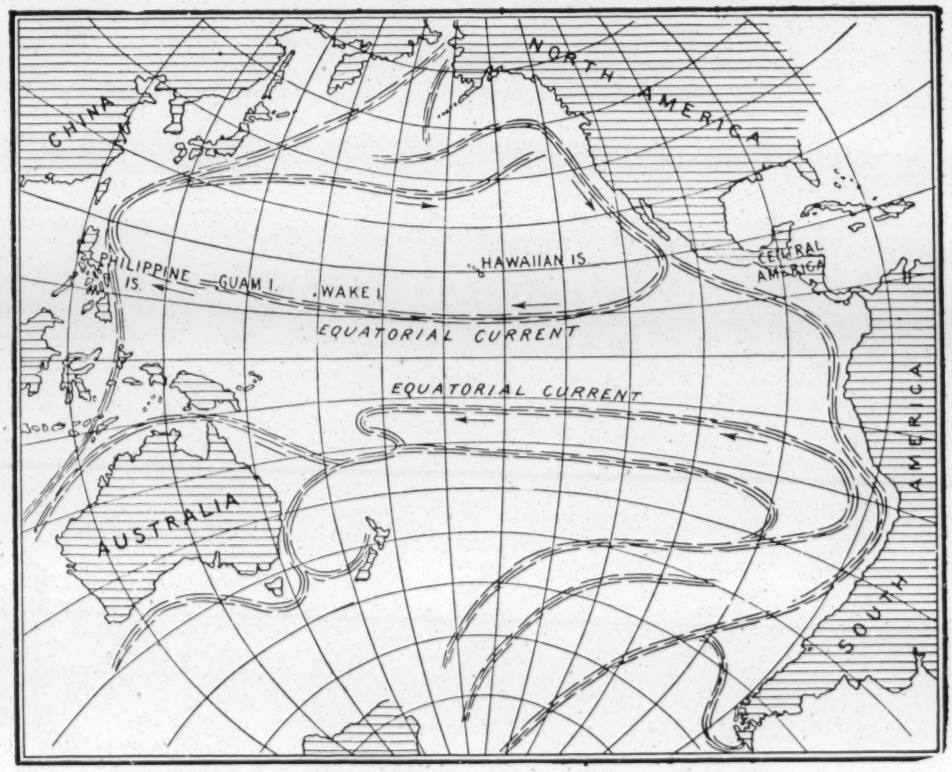
OUR PROSPECTS OF INCREASING OUR SHARE IN THE COMMERCE OF THE ORIENT VERY BRIGHT

What are our prospects of increasing our share in that commerce? Europe is, of course, our chief rival in the attempt to supply the imports of the Orient. The European countries, including the British Isles in this term, send to Asia and Oceania about 600 million dollars' worth of merchandise annually, and the United States sends about 100 millions; and we are gaining ground in the Orient even more rapidly than are the European countries. The imports of China, Japan, and Australia from all the European countries combined show an increase in 1903 of but 45 millions as compared with 1890, while their increase in importations from the United States alone in the same period was 49 millions thus showing that our gains in their import trade are actually greater than those of all Europe combined. Comparing the total imports of all Asia and Oceania in 1903 with those of 1890, we find an increase of about 22 per cent in the imports from all Europe and of 160 per cent in the imports from the United States

From C. L. Marlatt, Department of Agriculture

Transportation in China

The wheelbarrow has served as carriage and cart throughout many sections of the Empire for many centuries



The Air and Water Currents of the Pacific. See page 422

But there are special reasons why we may expect to increase our share in the trade of the Orient, and especially our share in supplying its imports. The Orient produces large quantities of the class of merchandise which we must import, and imports equally large quantities of the class of merchandise which we produce and desire to sell. Our imports of raw silk, and tea, and hemp, and jute, and tin, and goat skins, and other articles of the class produced in the Orient amount to hundreds of millions of dollars annually, and our imports from Asia and Oceania have grown from less than 32 millions of dollars in 1870 to 190 millions in 1904. The Orient is a large importer of cotton and cotton goods, mineral oils, manufactures of iron and steel, flour, and meats, in all of which the United States is the world's largest producer.

The imports of cotton goods alone into the Orient amount to 250 million dollars per annum, and in this trade we should have a large share. We produce three-fourths of the world's cotton, and our factories are turning more and more of it into the manufactured form each year, and there seems no good reason why we should not supply at least one-half of the cotton goods imported into the Orient instead of less than one-tenth, as at present. Our production of mineral oil, fit for use in lighting, of which the imports into the Orient are about $35,000,000 annually, is larger than that of any other country, and we

should not only retain but increase our trade in this article. In iron and steel, in which the Orient is rapidly increasing its imports, we are the largest producers in the world, and should therefore enlarge our share in supplying that trade. The natural advantages which we have in supplying that section of the world were shown by the large orders for flour and meat and many other articles which were poured in upon the dealers of the United States at the opening of the Russo-Japanese war, and these hurry orders came from both governments, which thus agreed at least upon one point—that the United States is a natural source of supply for that great section, at least in these important requirements.

THE ADVANTAGES WHICH WE HAVE

But there is another condition which should and will give us marked permanent advantages in the commerce of the Orient. We are about beginning the construction of the great Isthmian Canal, for which the world has waited so long, and which, when completed, will place our great producing and manufacturing sections of the East and South in direct water connection with all parts of the Orient. Our Mississippi Valley is the world's greatest producer of breadstuffs and meats; the South, the world's greatest producer of cotton; our great iron fields are the world's largest producer of that important metal, and our manufacturing system is the greatest in the world. When all of these great fields of supply are given direct water communication with the Orient, they should be able to largely increase our contributions to her requirements, and the 100 millions of merchandise which we now send each year to the Orient should grow to at least 500 millions.

Not only have we marked advantages in the fact that we are the world's chief producer of the articles which the Orient requires, but we have other natural advantages in our relations to the Pacific Ocean, which is to prove the chief highway for the commerce between these two sections and peoples. We have a much greater frontage on the Pacific Ocean than any other nation, and better harbors, not only upon the mainland, but also the principal island harbors of the entire ocean. Our national frontage on the Pacific, considering only the number of nautical miles to be protected, patrolled, or lighted, is 12,500, while that of the United Kingdom is 10,000, Russia a little over 6,000, Japan a little less than 5,000, and China little more than 3,000 miles, so that our frontage upon the Pacific exceeds that of any other nation.

Not only have we marked advantage in frontage harbors, but in facilities for direct communication the developments of recent years have been of great importance. The experience of cable builders and operators shows that ocean cables cannot be operated more than 3,000 miles without relay stations, and the fact that the islands scattered through the Pacific were formerly under the control of foreign nations with varied interests delayed greatly the construction of a trans-Pacific cable. Now, however, that the United States flag floats over Hawaii, Wake Island, Guam, and the Philippines, it has been practicable for American capital to string upon these great natural telegraph poles a line of wire which now connects all parts of the United States with the great business centers of all Asia and Oceania.

I cannot close this discussion of our natural advantages of our trade with the Orient without again calling your attention to another condition presented in an address before the Society in 1902, an address which the Japanese government has done me the honor to reprint in its own language for distribution throughout Japan. In that address I said:

"In certain great natural conditions, which are as unchangeable as the oceans and the continents and the revolution of the earth itself, nature has given to the United States marked advantages regarding the movement of vessels between her western shores and the eastern coast of Asia, where the trade of the Orient must always enter, and in this belief I find myself fully supported by the practical opinion and experience of distinguished officers of the American and British navies and by men who have had long experience in the commerce of that great ocean. These advantages to which I allude are found in the great and permanent currents of air and water which flow westwardly across the Pacific in the vicinity of the equator, turning northwardly along the coast of Asia, and, following the Japan coast, again move toward the east across the north Pacific and down the western coast of North America to the point of beginning. In the map herewith presented are shown the ocean currents and the currents of air, the direction of the movement in each case being shown by arrows. It will be seen that the equatorial current begins its westward movement at the very point in which vessels from an isthmian canal would enter the Pacific, and moves steadily westward to the vicinity of the Philippines, then, turning northward along the coast of China and Japan, is deflected to the east, flows eastwardly across the north Pacific to the American coast, and then moves down the western coast of the United States to the point of beginning. The air currents, while their exact location is somewhat affected by the changes of the seasons, follow practically the same lines and are equally certain and reliable.

The rate of speed at which this ocean current flows in its great circular movement across the Pacific and return is probably on an average of about one mile per hour, or 24 miles per day, while the rate of the movement of the air currents is, of course, much more rapid. While there is a general belief that vessels propelled by steam are little affected by favorable or adverse winds, a series of experiments recently made by German navigators and scientists shows that even with high-power steam vessels of modern type a difference of from 50 to 100 miles per day is realized in traveling with or against winds of any considerable power. These facts, it seems to me, justify me in the assertion which I made, and now repeat, that this steady, permanent flow of air and water—a flow which will never cease so long as the earth revolves toward the east and the great bodies of land and water retain their present relative positions—must always give to the North American continent a marked advantage in the commerce of the Pacific. Its vessels from the eastern coast, entering the Pacific at the Isthmus, will move westward, aided by air and water currents, past our Hawaiian Islands, Wake Island, and Guam to the Philippines; thence northward to those two great trade centers, Shanghai and Yokohama, and thence, still following these currents, will move to the east along that shortest route known as the 'great circle,' in the north Pacific, touch at our western ports for transshipment of freights for the East, and then, still following the ocean current down our Pacific coast, will reach the entrance to the Isthmian Canal, having been aided by favorable currents of air and water in the entire circular tour of 18,000 miles. The feasibility of this plan is found in the fact that, while the actual sailing distance from the western end of the proposed Isthmian Canal to Manila via Hawaii and Guam is 9,500 miles, the return trip from Manila via Shanghai, Yokohama, and San Francisco to the canal is but 10,000 miles, with the advantages of favorable wind and current in practically every mile of the entire distance."

Aryan man, the great explorer and trader and civilizer of the world, is about to complete his circuit of the globe. Beginning his career of activity in the western section of the Orient, he sent one branch of his family eastward into India and Burmah, while the more progressive and vigorous branch turned its face resolutely toward the setting sun. Westward, through the mountains and valleys and plains of Europe, he marched until he reached the Atlantic, sending thence a thin line eastward by way of the northern and southern routes, to begin the flanking movement upon the commerce of the Orient, while the main body of his forces still moved resolutely to the west, across the Atlantic. In America he halted for a time, until he had peopled and developed that magnificent section of the world, and then he began his final movement upon that great commercial prize, to which his eyes had been turned for thousands of years. Building his railways across the American continent and laying his cables beneath the waters of the Pacific, he moved steadily across that great ocean, step by step and island by island, and today Aryan man, American man, stands in the Philippine Islands knocking at the doors of Asia, inviting the nations of that great continent to admit him to a peaceful interchange of commodities, and with that a development of friendship which shall be strong and lasting and beneficial to the whole world.

MAPS RECENTLY PUBLISHED BY THE U. S. GEOLOGICAL SURVEY*

THE OURAY QUADRANGLE, COLORADO

THE only important town or settlement in the quadrangle is Ouray, a city of 2,500 inhabitants, which is the southern terminus of the Ouray branch of the Denver and Rio Grande Railroad. Ouray, which is widely known as a gold and silver mining camp, produces a daily output of gold alone approximating $10,000 during a large part of the year. Among the mines tributary to this town is the well-known Camp Bird mine.

The town of Ouray is most picturesquely situated. This beautiful region of massive and vari-colored mountains, tinted in autumn with all the blends of quaking aspen and mountain spruce, well deserves its local appellation, "The Switzerland of America." East of Ouray lies a vast arena, 1½ miles in diameter and 1 mile in vertical depth, called "The Amphitheater," which is surrounded by superb volcanic walls that make it well nigh inaccessible. Farther southwest Canyon Creek enters Ouray through a box canyon so deep and narrow that it is said sunlight never enters there. Trails have been blasted in the quartzite walls and a portion of the canyon has been tunneled, so that the visitor may better inspect the dark recesses. Two miles south of town begins the Bear Creek trail, which is said to offer more magnificent scenery than any other bridle route in the West.

One of the very few old overland stage coaches now left in the West runs daily between Ouray and Red Mountain. Its route makes the closing link of 10 miles, through a country inaccessible to the railroad, in the famous "Around the Circle Route" of 1,000 miles, which is made wholly in the state of Colorado. Much of the stage road

*The price of these maps is 5 cents each. They may be obtained on application to the Director of the U. S. Geological Survey, Washington, D. C.

is cut from nearly vertical rock midway on the flank of a huge mountain at a cost, in places, of nearly $50,000 a mile. To travel along this road on the top of a stage drawn by six horses at a trot—"two in the tongue, two in the swing, and two in the lead"—gazing alternately into dizzy depths below and lofty heights above, is to have an experience that is never forgotten.

THE NEEDLE MOUNTAINS QUADRANGLE

The Needle Mountains are well worthy of special mention. They are extremely ragged in appearance, with snowbound summits, sharp as needles. Mostly inaccessible, they are seldom visited, and, save a landmark here and there, are yet unnamed. More than a hundred peaks rear their splintered pinnacles to heights exceeding 13,000 feet above sea level. Mount Windom, which attains a height of 14,084 feet, is the culminating summit.

The Animas Canyon, in the Needle Mountains, is one of the deepest furrows in a state famed for rugged topography. The tourist rail route creeps through 20 miles of this canyon valley, the granite sides of which tower from 3,000 to 6,000 feet above the track.

The triangulation for these maps was done by Mr W. M. Beaman. In the execution of the fieldwork Mr Beaman was assisted by Messrs J. F. McBeth and Arthur Stiles, assistant topographers, and a corps of field assistants. Field work at altitudes of 12,000 to 14,000 feet presents unusual difficulties. With only two-thirds of a sea-level atmosphere to breathe, and that so exhilarating as to make one's energy seem inexhaustible, care has to be exercised lest heart and lungs be over-stimulated. As the Needles form the crown of a mountain mass which is first in the path of the moisture-laden winds blowing overland from the Gulf of California, local thunder storms, accompanied by vivid lightning, are very frequent. On several occasions it happened that Survey topographers were caught on isolated peaks during such storms, where they were (to state the case mildly) strongly impressed by a sense of insecurity on account of their own snapping hair and the sparks emitted from noses and fingers, as well as from the metal parts of their instruments. The quaking of their knees under these conditions they subsequently attributed to powerful electric shocks.

The working season is short in these high altitudes. Snow drifts block the high passes often until July 1, while two feet of snow around the tents in September is not unusual. Nevertheless, besides determining by means of triangulation the heights of the numerous lofty peaks, several circuits of primary spirit-leveling of great accuracy were run. For total rise and fall per mile above 10,000 feet and for elevations of passes crossed, these circuits surpassed any similar level work ever done in the world.

THE CRIPPLE CREEK DISTRICT, COLORADO

The revised map of the Cripple Creek mining district shows the wonderful development of that great camp since 1894, when the first map was made. Gold had been discovered there only a short time before, and Cripple Creek was then merely a temporary camp, hastily thrown together to shelter a moving population of eager prospectors and excited speculators.

Since then the mining camps of Cripple Creek and Victor have become cities, and the little outposts of the earlier day are now known as the towns of Goldfield, Independence, Elkton, Anaconda, Altman, and Arequa. Numerous fires removed a large number of the first cabins and shacks, and in their places have arisen handsome substantial structures of brick and stone that would be a credit

to any city. Complete electric lighting plants, extensive waterworks, interurban electric and steam railways, and many other appurtenances of civilization are now conspicuous features of the landscape.

These changes are shown on the new map by a careful and accurate representation of every detail that is of sufficient size to receive recognition on a map drawn to a scale of 2½ inches to the mile, as this one is. So numerous have been the changes in this area during the last ten years that the two maps are hardly recognized as representative of the same area. Almost every cultural feature has been replaced by an improvement, and in places the shapes of the hills themselves have been altered. This is very apparent to any one who stands on one of the higher streets in Cripple Creek and observes the slopes of Gold Hill. Immense numbers of mine dumps and surface workings have destroyed the original contour of the mountain and given it an altogether different outline.

THE LONG LAKE QUADRANGLE, NEW YORK

Forest and lake are the most characteristic features of this area. The merest glance at the map shows that here the sportsman may realize his ideals and the lover of nature may rest content.

THE ST REGIS QUADRANGLE, NEW YORK

This is the most interesting and varied part of the country so far mapped in the Adirondack Mountains. The most characteristic feature of this quadrangle is the large number of ponds and lakes which it contains. There are nearly 200 of them. Many have no visible inlets or outlets and are separated by small terminal moraines from other ponds, which are only two or three feet higher or lower. Some of them are so connected as to furnish an unrivaled waterway through the woods.

The control on this quadrangle was furnished by Messrs E. L. McNair and George H. Guerdrum, and the topography was done in coöperation with the state of New York under the supervision of Mr Glenn S. Smith.

THE ROGERSVILLE QUADRANGLE, PENNSYLVANIA

About two-thirds of the area embraced in this map is used as farming or grazing land. The soil washed down by rain from the hilltops makes the farms in the valleys very rich. The hilltops themselves are used mostly as pasture land. Large numbers of sheep and cattle are exported every year from this region.

Considerable tracts in this area are covered with timber, but it is all a second growth of chestnut and oak and has no commercial value.

The whole area is underlain by the Pittsburg vein of coal. A low grade of coal outcrops around Durbin and Crabtree and is used only for local consumption.

Natural-gas wells are found all over the area and natural gas is the favorite fuel of the people in this region.

The triangulation for this map is the work of Mr Sledge Tatum. The topographic work was done by Messrs R. D. Cummin and E. G. Hamilton, under the direction of Mr Frank Sutton.

THE DENTON QUADRANGLE, MARYLAND

It embraces parts of Talbot, Queen Anne, and Caroline counties. If not literally a land of milk and honey, it is certainly one of peaches and tomatoes. It is one of the finest farming sections in the United States for small fruits and vegetables.

The farms in this part of Maryland are unusually large and well cared for. The climate is delightful, the soil fertile. Even where there is sand it is usually a sandy loam rather than just unqualified sand.

Nearly every village has its canning factory, and during the preserving season the hum of industry is loud. Facilities for marketing garden produce are, fortunately, excellent. This area was surveyed in 1904 in coöperation with the state of Maryland. The topographic work was done by Messrs Robert Coe, T. G. Basinger, and L. S. Leopold. The control was established by Messrs G. T. Hawkins, W. Carvel Hall, E. S. Ela, Carroll Caldwell, and R. L. Harrison.

THE OKANOGAN QUADRANGLE, WASHINGTON

The town of Bruster, on the Columbia, is the chief settlement in the quadrangle. In times of high water a boat plies from Bruster up the Okanogan to Riverside.

The topography for this map was done by Mr L. C. Fletcher, who was assisted by Mr W. C. Guerin. The triangulation was the work of Mr C. F. Urquhart.

THE SKYKOMISH QUADRANGLE, WASHINGTON

In this lofty region some of the grandest mountain scenery on the continent may be enjoyed by passengers on the Great Northern Railroad, which runs east and west through the center of the quadrangle. By means of the Great Cascade tunnel, which is only a few feet short of 2 miles in length, the railroad pierces the summit of the mountain range and descends by tortuous windings about 2,600 feet within the quadrangle. One of the most striking scenic features along the road is Index Mountain, a great granite pinnacle nearly a mile high, which looks like a huge copy of the Leaning Tower of Pisa.

Many beautiful glacial lakes lie along the slopes of the mountains. Opportunities for the development of water power are numerous. A short distance west of this quadrangle are Snoqualmie Falls, whence comes the power which generates electricity for Seattle.

Very good grazing lands are found in the northeast corner of the quadrangle, where many sheep browse during the summer.

The principal town of the region is Skykomish. Situated on the line of the Great Northern Railroad and on the Skykomish River also, it is the chief source of supplies for the miners throughout the quadrangle. Large lumber mills are located there.

The topographic work within the Washington Forest Reserve was done by Mr T. G. Gerdine in 1897. The rest of the quadrangle was surveyed in 1902, under the general supervision of Mr A. E. Murlin, by Messrs Murlin, C. W. Sutton, and W. C. Guerin.

THE WAYNE QUADRANGLE

This is a part of the richest and most populous county in the state of Michigan. The chief topographic feature of the quadrangle is the ancient bed of Lake Erie, which extends from the 600 to the 720-foot contour, to the old shore line, or Belmore beach, running through Plymouth and Farmington to the northeast. Northwest of the Belmore beach the surface is a broken terminal moraine.

The principal occupations of the people of this area are farming, dairying, and the raising of fruits and vegetables. In the larger villages there are some small manufacturing establishments. At Northville there is a federal fish hatchery. The Wayne County Home, a model institution of its kind, is located at Eloise.

The topography of the map was done by Messrs Robert Muldrow and J. T. McCoy, the control by Messrs George T. Hawkins and J. R. Ellis.

THE LARAMIE QUADRANGLE, WYOMING

It embraces about 900 square miles in Albany county. Laramie, which enjoys the distinction of being the county seat, is a thriving town, with a population of

8,200, situated on Laramie River and the main line of the Union Pacific Railroad. With an altitude of over 7,150 feet above sea level, it ranks as one of the highest towns in the United States. It is the seat of the University of Wyoming. The state fish hatchery and the agricultural experiment station are located there. It is also the shipping and trade center for a large area of country in which mining and stock raising are the chief industries. It has also rolling mills, plaster mills, limestone quarries, and railroad and machine shops.

Large numbers of cattle and sheep are pastured on the plains about Laramie and great quantities of hay are harvested along the Laramie and Little Laramie rivers. A number of gold and coal mines have been opened in the mountains just west of Laramie.

The topography is the work of Mr William Stranahan. The triangulation was done by Messrs Frank Tweedy and R. H. Chapman.

THE WOODSFIELD QUADRANGLE, OHIO

This is a rich agricultural section, but important as are crops of wheat, corn, oats, and potatoes, orchards of apples, peaches, and pears, herds of cattle, and forests of timber, they are not the chief treasures of this area. A 6-foot vein of Pittsburg coal underlies most of the quadrangle. Its development has only begun. Some of the richest oil and gas wells in the state are also near this area.

SOME NOTES ON THE FOX ISLAND PASSES, ALASKA

By J. J. Gilbert, U. S. Coast and Geodetic Survey

OUR knowledge of the geography of the Aleutian Islands was very inexact until, in 1901, the Coast and Geodetic Survey sent two vessels to survey the Fox Island passes and eastward to the Sanak Islands. Westward of these passes and Unalaska Bay no surveys have yet been made, if we except one small harbor at Kiska Island.

The population of the Aleutian Islands, which spread over many degrees of longitude, is very meager, and is decreasing every year. A large number, estimated at about 30 per cent, died of measles in 1900, and tuberculosis of throat and lungs is very common.

The Aleuts, who strongly resemble the Japanese, live in a few small villages, widely separated. Some, and perhaps the greater number, of these villages are abandoned trading posts, established by the Russians previous to 1867, and the buildings originally constructed as warehouses and quarters for the agents and employés of the Fur Company are now occupied as homes by the few remaining natives. The only village of any size is Iliuliuk, on Unalaska Island, where the Alaska Commercial Company has maintained a post ever since the purchase. In the territory covered by the party surveying the passes there are but two other villages—one on Biorka Island and the other in Akutan Harbor; the population of both will hardly reach two score.

There are here and there evidences of old villages, indicating a considerable population in the past. These are cellar-like excavations from 10 to 15 feet square and 4 to 6 feet deep. As there is no timber growing on the islands, the lining and roofing of these

dug-out huts must have been a serious undertaking, necessitating the gathering of driftwood from far and near. These old excavations are now covered with a rank growth of grass, and the unwary surveyor was liable to drop out of sight without warning.

The islands are mountainous, with a few narrow valleys, devoid of trees, mostly too rocky for any vegetation, but the smoother slopes are covered with long coarse grass. Each year the grass is matted down by the winter snows, the new grass grows up through the old straw, and the result is a springy mattress very tiresome to travel over.

When our party reached the passes on May 16 the mountains and hills were covered with snow, which in many places came down to the water's edge. It is the rare exception when the hills are not obscured by clouds, which often hang so low that only the beach line is visible. It is not probable that 1 per cent of those who go through the passes on their way to Nome, St Michael, or the Yukon have ever enjoyed an unobstructed view of the higher mountains and volcanoes, and often they have only seen the bases of the hills bordering the water.

During the early part of the season the clouds hung persistently low on the hills, greatly impeding the work of the survey, but as the season advanced and the snow melted the clouds were less persistent and hung higher and higher until during the last weeks of September, when the snow had disappeared from all but the very highest mountains, the clouds lifted, and the grand scenery of the passes was displayed unobscured during several successive days. While steaming into Beaver Inlet one of these clear days we enjoyed a rare sight—four active volcanoes, each emitting smoke. These were Shishaldin, 9,387 feet, from whose lofty funnel the smoke, black as if from recent stoking, streamed away many miles to leeward; Pogromnoi, also on Unimak Island, 6,500 feet; Akutan Peak, Akutan Island, 4,100 feet, and Makushin, Unalaska Island, 5,691 feet. One night earlier in the season, while anchored in Akun Bay, we saw the flames issuing from Shishaldin, 45 miles away, having the appearance of a burning smokestack.

On entering Akutan Pass from the south the first headland on Akutan Island is a conspicuous landmark, 1,600 feet high, which has some interesting features. To the members of the party this headland was known as "Liberty Cap," a name suggested by the crest, which resembles in outline the cap on the statue of liberty surmounting the dome of the Capitol. The suggestion of the Capitol is further strengthened by the formation at the base of the promontory, which presents a rounded face to the sea with several openings to the interior, one of them large enough to admit the steam launch; this is an arched gateway 20 feet across and about 12 feet high. Running through this passageway, some 30 feet long, with the launch we came into a large circular room which reminded us of the rotunda at the Capitol. This amphitheater is at least 100 feet in diameter, with an arched dome 100 feet high, having a large opening to the sky near the top, as though a part of the dome had been shaken down by an earthquake. There is good water, two fathoms or more, over the floor of this remarkable cavern. Besides the passage by which we entered, there are several others of varying widths, some leading by winding ways through to the open, others piercing deep into the base of the headland. It is the noise of the waves lashing into these narrow passages probably that gave origin to the name "Battery Point," by which this point is designated on the recent charts.

The tidal currents in the passes are very swift, sometimes as much as eight or ten knots, often causing "rips" of terrific violence. These tide rips are discernible a long distance by the white gleam of tumultuous waters, and it is

sometimes possible to avoid them by running to one side, as they are usually, at least during the summer season, of limited extent, though following a somewhat erratic track.

Although alarming and even dangerous to a vessel in the midst of one of these rips, it is a grand sight when the water comes tumbling over the bows and sides, throwing the spray over bridge and tossing the ship about like a cockleshell.

It is hardly conceivable that a small launch or a whaleboat could live through one of these tide rips—even a small steamer would have a strenuous time of it.

The tide rips in Akutan and Unalga passes occur most frequently during spring tides, after the current has begun to run strong and when the wind is opposed to the current, but the opposing wind is not an essential element, as they sometimes occur during calm weather, when the sea is elsewhere perfectly smooth. It is safe to go through these passes at slack tide.

Aquatic birds, chiefly of one species, are abundant. Sometimes, more particularly in thick weather, we steamed through miles of them, and the noise as they rose from the sea, beating the water with their wings, was deafening. We had some of these birds prepared for the mess, but did not find them palatable.

Food fish of good quality are plentiful, but only in particular localities. We never failed of a good catch in English or Codfish bays.

Whales are frequently seen, sometimes in large schools. It was an interesting sight, one day, watching a dozen large whales feeding in a small bight at Egg Island, rolling over and over, evidently chasing a school of fish, which were frantically leaping from the shallow water along shore.

The impression upon the visitor to this region is one of grandeur, barrenness, and loneliness. There are no trees or bushes and rarely is there a glimpse of animal life other than aquatic. Once or twice we saw a ptarmigan or a fox; more often an eagle perched on a lofty crag added emphasis to the sense of loneliness and isolation.

A COMPARISON OF NORWAY AND SWEDEN

RECENT events in the Scandinavian Peninsula lend interest to statistics just compiled in the Bureau of Statistics of the Department of Commerce and Labor regarding the population, comparative resources, and industries of Sweden and Norway, as well as their commerce with the United States and other countries. Sweden and Norway have a combined area of 297,006 square miles, about equal to that of Texas and the Indian Territory. Their population is 7,484,301, practically the same as that of the state of New York. The area of Sweden is about 40 per cent more than that of Norway, the territorial extent of the two countries being 172,876 square miles and 124,130 square miles respectively.

Notwithstanding less favorable natural conditions, such as the poverty of the soil, about 75 per cent of which is unproductive, and a rigorous climate in the larger part of the country, also a relatively larger emigration, the population in Norway increases faster than in Sweden. Thus, the population of Sweden increased, between 1893 and 1903, from 4,824,150 to 5,221,291, or 8.2 per cent, while that of Norway grew from 2,032,-

100 to 2,288,535, or 12.6 per cent, during the same period. The total emigration from the two countries and the number of emigrants whose destination was the United States are shown in the following table:

Year.	From Sweden.		From Norway.	
	Total.	To United States.	Total.	To United States.
1893	40,869	37,321	18,778	*18,766
1894	13,358	9,529	5,642	5,591
1895	18,955	14,982	6,207	6,153
1896	19,551	14,874	6,679	6,584
1897	14,559	10,109	4,669	4,580
1898	13,663	8,534	4,859	4,805
1899	16,876	11,842	6,699	6,466
1900	20,661	16,209	10,931	10,625
1901	24,616	20,306	12,745	12,488
1902	37,107	33,151	20,343	19,225
1903	39,496	.....	26,784	24,998
Total	259,711	176,857	124,336	120,311

*To America.

If the average population for the period 1893–1903—5,043,700 for Sweden and 2,165,600 for Norway—be compared with the corresponding average emigration figures—23,610 for Sweden and 11,303 for Norway—the rate of emigration appears higher for Norway than for Sweden, 5.2 per thousand as against 4.7 per thousand. During the decade 1893–1902 of the emigrants from Sweden who left their country over 80 per cent stated as their destination the United States, while of 124,336 Norwegians who left their native country, about 97 per cent, at the port of embarkation, indicated this country as their future home.

Of the total estimated population of Sweden in 1903, only 22.3 per cent appear under the head of urban dwellers, while of the total population of Norway, according to the 1900 census, 28.8 per cent are returned as living in urban settlements.

The difference in the industrial character of the population is shown, furthermore, by the fact that in Sweden the mainstay of the population is still agriculture, with its cognate branches, while in Norway the importance of agriculture is about the same as that of the fisheries, each of which industries, according to official estimates, furnishes an annual product of about 15 million dollars, or about 10 per cent of the annual national income. The average value of the principal cereal productions in Sweden for the years 1898–1902 is stated at $65,338,000, while the average value of Norwegian cereal crops for 1896–1900 was estimated at $9,640,000 only. This as well as the relative absence of minerals of industrial importance, involves a much greater dependence on the part of Norway upon imported breadstuffs and raw materials, and results, as a further consequence, in a tariff policy distinct from that of the sister nation. The imports of breadstuffs, including flour, during the calendar year 1903 into Sweden amounted in value to $16,331,000, and to $15,229,000 in Norway.

The only common industry of importance, especially for the foreign trade, is lumbering, inasmuch as both countries abound in forests, particularly spruce and pine, both of which varieties find ready sales in British and continental markets. Of the total domestic exports from the two countries, the exports of lumber and timber and manufactures thereof, such as wood pulp and matches, constituted 51.7 per cent in the case of Sweden and 40.4 per cent in the case of Norway.

The mining and the metal industry, which is an important source of national wealth in Sweden, giving employment to 30,731 persons in 1903, has but little importance in the national economy of Norway.

On the other hand, the earnings of the Norwegian merchant marine, especially of vessels engaged in the carrying trade between foreign ports, constitute a large portion of the national revenue and serve to offset in part the unfavorable trade balance. Norway's merchant marine is fourth in size among the merchant marines of the world, be-

ing exceeded only by those of the United Kingdom, the United States, and Germany. Its total tonnage is nearly one and a half million tons, as against 625,000 tons for Sweden. Its total earnings in 1902 were 29.7 million dollars, as against 13.4 millions earned by Swedish merchantmen, while the amounts earned by Norwegian vessels in carrying freight between foreign ports only was $22,375,000, as against $3,644,000 earned by Swedish vessels for similar services.

Sweden imports about 142 million dollars' worth of merchandise annually, about 6½ millions being from the United States, and Norway imports about 78½ million dollars' worth of merchandise, a little less than 5 millions being supplied by the United States. The exports from Sweden in the latest available year were 118¼ million dollars in value, about 3¼ millions having been taken by the United States, while from Norway the exports were 46½ million dollars in value, of which less than two millions were imported by the United States.

Our exports of domestic products to Sweden and Norway amounted to $11,325,383 in value during the fiscal year 1904, as against $10,071,565 during the preceding year. Less than twenty articles or groups of articles supply the bulk of the merchandise exported to Sweden and Norway from the United States. Arranged in the order of magnitude in 1904, the more important articles exported include the following: Refined mineral oil, $2,068,324; oleomargarine, $1,201,266; raw cotton, $1,155,708; iron and steel manufactures, $796,671; lard, $688,754; wheat flour, $565,755; copper and manufactures, $393,791.

Our imports from Sweden and Norway were valued at $5,258,114 in 1904, as against $4,975,234 in the preceding year. We are thus exporting to Sweden and Norway a little over twice as much as we import from those countries. Wood pulp forms a large portion of our imports from Sweden and Norway, the figures for 1904 being $1,202,455. Bar iron is next in order, $1,014,378; wire rods amounted to $559,914; machinery to $413,500, and hides and skins, except fur skins, to $309,518. Nearly all of the remaining imports were fishery products, amounting to about $1,000,000.

The following table presents statistics of the principal elements of national progress in Sweden and Norway respectively, the figures being those for 1903, or the latest available date:

Comparative statistics of Sweden and Norway for year 1903, or latest available year.

	Sweden.	Norway.
Area.....square miles...	172,876	124,130
Population.....number...	5,221,291	2,263,010
State revenue.....dollars...	47,496,000	23,247 000
Railways.....miles...	7,636	1,481
Merchant marine:		
Steam.....registered tons...	356,510	603,625
Sail.....do.....	279,223	840,279
Vessels entered in foreign trade.....tons...	8,857,826	3,250,724
Vessels cleared in foreign trade.....do.....	8,861,372	3,240,062
Imports.....dollars...	141,979,000	78,472,000
Exports.....do.....	118,291,000	46,531,000
Exports of domestic merchandise from United States to..dollars...	6,446,804	4,878,579
Imports into United States from.....do.....	3,265,843	1,992,271
Average ad valorem duty on total imports.....per cent...	10.60	11.46
Public debt.....dollars...	92,518,000	71,032,000
Annual interest charge.....do.....	3,248,000	2,301,000
Commercial and savings banks deposits.....dollars...	379,163,000	160,678,000
Manufacturing establishments:		
Number of.....	11,588	3,488
Number of employees.....	271,157	81,813
Horse-power.....	454,386	244,237
Value of output.....dollars...	299,154,000	No data.
Gross freights earned by vessels engaged in foreign trade in 1902.....dollars...	13,455,000	29,738,000

While no gold or silver bullion appears to have been sent to or received from Sweden and Norway, United States Consul Bergh, at Gottenborg, reports incoming money orders to the value of $2,500,000 sent from the United States to Sweden during 1904, and outgoing money orders to the value of $500,000 sent from Sweden to this country, a net movement of $2,000,000 to Sweden from the United States during a single year.

EUROPEAN POPULATIONS

IN the fifty years, 1850 to 1900, Russia shows the largest increase and France the smallest in the principal populations of Europe. The figures, in round millions, are:

	1850.	1900.	Increase.
Russia	67,000,000	129,000,000	62,000,000
Germany	26,000,000	56,000,000	30,000,000
Great Britain	27,000,000	41,000,000	14,000,000
Austria-Hungary	30,000,000	45,000,000	15,000,000
Italy	23,000,000	32,000,000	9,000,000
France	35,000,000	39,000,000	4,000,000

Two reasons account for the small French increase, namely, the loss of Alsace-Lorraine and the decreasing birth rate. The last is the most serious. In 1899 the excess of births over deaths in five of the countries named was:

Germany	795,107
Austria-Hungary	530,806
Great Britain	422,156
Italy	385,165
France	31,321

The following year, 1900, the French excess of births was only 20,330. It is a fact that 1,808,839 French families are without children. That is 16.68 per cent of all the families in France. It is also a fact that 2,638,752 French families, or 24.33 per cent, have only two children each.

In 1800 the population of Europe was 98,000,000, of which 26,000,000 were French; in 1900 the figures were 343,000,000 and 39,000,000. In other words, total Europe increased 245,000,000 in the century, but France can only be credited with 13,000,000 of that increase. Thus France fell from 26 per cent to 11 per cent of Europe's population in the one hundred years.

"At one time," says American Consul Haynes, of Rouen, France, "French was spoken all over the world; now (1905) it is the language of 45,000,000 people (including the French colonies), while German is spoken by 100,000,000 and English by 150,000,000."

In the fifty years, 1850 to 1900, the increase in the population of the United States was 53,000,000, or 14,000,000 more than the present population of France proper. It can be put another way: The population of the leading republic of the new world, which was 12,000,000 less in 1850 than that of the leading republic of the old world, is now more than double that of its chief republican competitor. Of course, the heavy American immigration largely accounts for this; but the American excess of births over deaths is, year after year, much larger proportionately than that of France.

Until 1850 France was in point of population the first of the great European nations; today she stands sixth, with Italy pressing hard to set her back to seventh and last place.

In Germany there are 600,000 more births each year than in France; that is why Count von Moltke said: "Every year by our birth rate we gain a battle over France."

Russia doubles her population each 50 years; Norway and Sweden, each 52; Great Britain and Germany, each 55; Belgium, each 79; Italy, each 84; Spain, each 104; Austria-Hungary, each 110, but France only each 183 years.

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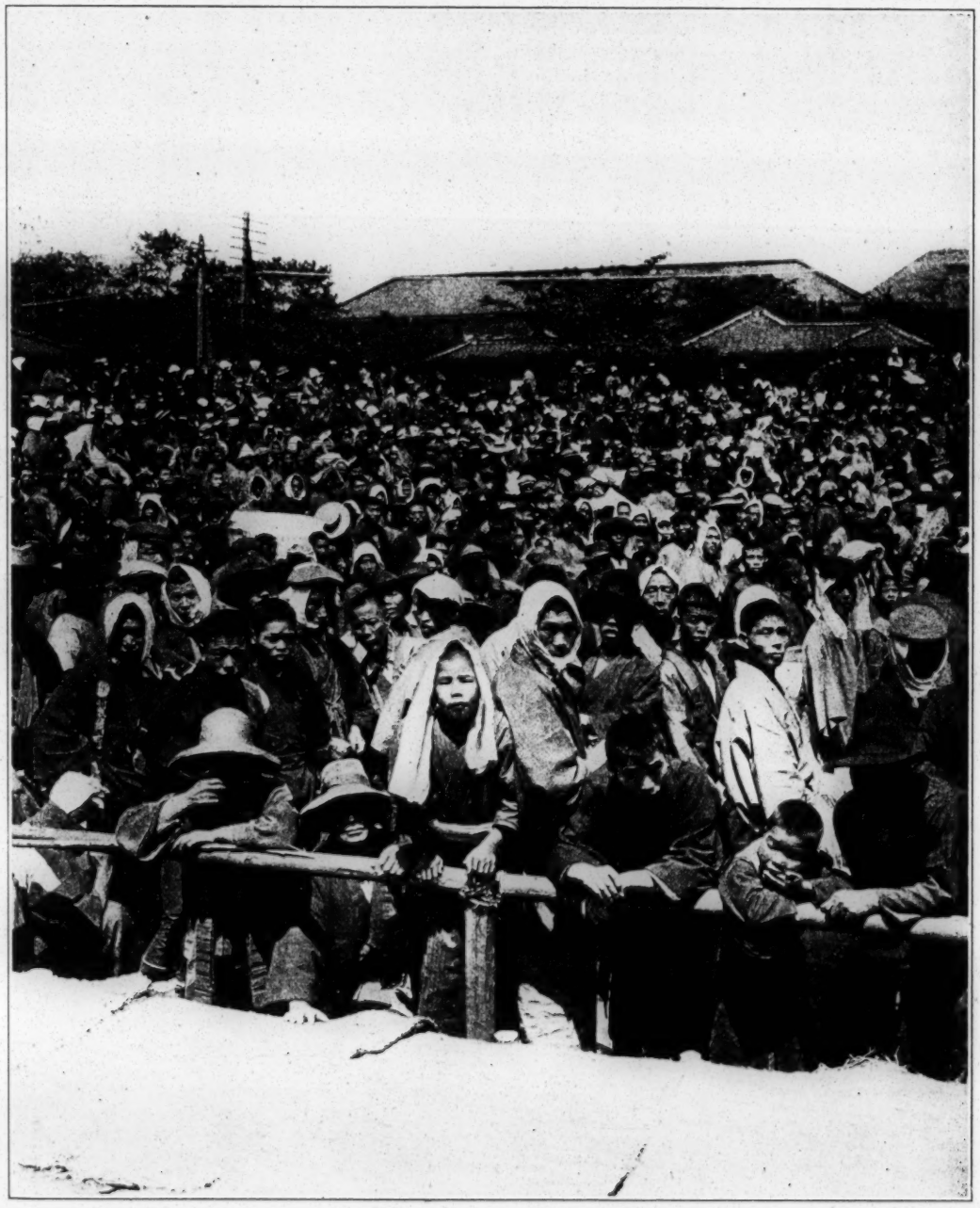
JAPAN AND THE UNITED STATES

THE remarkable growth of Japanese foreign commerce during the first six months of this year, especially of imports from foreign countries, is shown in the June Monthly Return of the Foreign Trade of the Empire of Japan.

As compared with the six months' figures for the previous year, the imports show the remarkable increase of 56.9 per cent, from $90,952,000 to $142,659,000, while exports for the same period show a relatively insignifi-



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Japanese Peasants Watching a Wrestling Contest

cant growth of less than 4 per cent, from $68,458,000 to $71,098,000.

It is of interest to note that while the largest increases in imports are credited to the United States, the United Kingdom, and British India, the largest increases in exports occur under the head of China, United States, and Korea. Thus imports from the United States for the first six months of the year 1905 were $31,921,000, as against $13,328,000 during the same period of 1904; imports from the United Kingdom were $32,623,000, as against $16,982,000; imports from British India were $34,034,000, as against $21,092,000, while imports from Germany are stated as $10,794,000 for the first six months of this year, as against $6,985,000 for the same period of the year 1904. As regards imports from other countries, they have increased at a much lower rate, or else show decreases.

The exports during the same periods were largest for China, which is credited with $21,932,000, as compared with $14,953,000 during the first six months of 1904. The United States ranks next among the countries to which Japanese products are destined, the figures for the first six months of 1905 being $20,304,000, as against $19,910,000 for the previous year. In the third place now stands Korea, with $5,852,000, as against $3,840,000 for the same period of 1904. The exports to the other countries are relatively small and, moreover, show decreases. Thus exports to France, one of Japan's large customers of silk, have fallen from $7,117,000 during the first six months of 1904 to $5,401,000 during the first six months of 1905. The exports to the United Kingdom have likewise decreased from $4,343,000 to $3,335,000, while exports to Germany have fallen from $1,098,000 in 1904 to $1,045,000 in 1905.

The leading position of the United States in Japanese foreign commerce is seen from the fact that this country furnished 22.4 per cent of the total imports during the first six months of 1905, as compared with 14.7 per cent of the total imports during the same period of 1904, and is credited with 28.6 per cent of the total domestic exports during the first half year in 1905, as compared with 29.1 per cent of the total domestic exports of Japan for the first six months in 1904.

OUR IMMIGRATION IN 1905

FOR the first time in the history of our country the number of foreigners whom in twelve months we adopted as permanent citizens has exceeded one million. The official figures have just been published by the Bureau of Immigration and are given on the opposite page.

MAP OF THE PHILIPPINES

FOR the map of the Philippine Islands which was published as a supplement to the August number of this magazine we are indebted to the Bureau of the Census. The map was compiled under the special direction of Mr Henry Gannett, assistant director of the Philippine census, to illustrate the report on the Philippine census. Through the courtesy of Gen. A. W. Greely, U. S. A., chief signal officer, the government and civil telegraph lines were added to our edition of the map.

EXPORTS OF MANUFACTURES

EXPORTS of manufactures from the United States in the fiscal year 1905 were not only the largest on record, but are in excess of the combined exports of all articles in the centennial year, 1876, and nearly 140 million dollars more than the total imports and exports of the country at the close of the civil war.

Statistics just compiled by the Bureau of Statistics of the Department of Commerce and Labor show that the exports

Comparative statement showing the number of aliens (exclusive of aliens in transit) admitted to the United States, by countries, during the fiscal years ended June 30, 1904 and 1905, respectively, showing increase or decrease for each country.

Countries.	1905.	1904.	Increase.	Decrease.
Austria	111,990	177,156	98,537	
Hungary	163,703			
Belgium	5,302	3,976	1,326	
Denmark	8,970	8,525	445	
France, including Corsica	10,168	9,406	762	
German Empire	40,574	46,380		5,806
Greece	10,515	11,343		828
Italy, including Sicily and Sardinia	221,479	193,296	28,183	
Netherlands	4,954	4,916	38	
Norway	25,064	23,808	1,256	
Portugal, including Cape Verde and Azore Islands	5,028	6,715		1,687
Roumania	4,437	7,087		2,650
Russian Empire	167,928	145,141	39,756	
Finland	16,969			
Servia, Bulgaria, and Montenegro	2,043	1,325	718	
Spain, including Canary and Balearic Islands	2,600	3,996		1,396
Sweden	26,591	27,763		1,172
Switzerland	4,269	5,023		754
Turkey in Europe	4,542	4,344	198	
England	64,709	38,626	26,083	
Ireland	52,945	36,142	16,803	
Scotland	16,977	11,092	5,885	
Wales	2,503	1,730	773	
Europe, not specified	13	143		130
Total Europe	974,273	767,933	206,349	
China	2,166	4,309		2,143
Japan	10,331	14,264		3,933
India	190	261		71
Turkey in Asia	6,157	5,235	922	
Other Asia	5,081	2,117	2,964	
Total Asia	23,925	26,186		2,261
Africa	757	686	71	
Australia, Tasmania, and New Zealand	2,091	1,461	630	
Philippine Islands	39	52		13
Pacific Islands, not specified	36	42		6
British North America	2,168	2,837		669
British Honduras	123	109	14	
Other Central America	1,072	605	467	
Mexico	2,637	1,009	1,628	
South America	2,576	1,667	909	
West Indies	16,641	10,193	6,448	
All other countries	161	90	71	
Grand total	1,026,499	812,870	213,629	

of manufactures in the year just ended amounted to $543,620,297, as against $452,415,921 in the preceding year, $433,851,756 in 1900, and $183,595,743 in 1895. The growth in exports of manufactures far exceeds the growth of population or the growth in commerce as a whole. This is apparent from an examination of the following table, showing the population, commerce, and exports of manufactures of the United States in 1800, 1875, and 1905, and the percentage of increase in each since 1800 and 1875, the beginning of the greatest era in American development:

Year.	Population.	Commerce (imports and exports of merchandise).	Exports of domestic manufactures.
		Dollars.	*Dollars.*
1800	5,308,483	162,224,548	2,493,755
1876	45,137,000	1,001,125,861	100,492,055
1905	83,145,000	2,636,074,349	543,620,297
Per cent of increase:			
1800–1876	750	517	3,930
1876–1905	84	63	441

Iron and steel manufactures supply about one-fourth of the manufactured articles exported from the United States, the total in 1905 having been $134,727,921, as against $111,948,586 in the preceding year, an increase of nearly 23 million dollars. Steel rails showed an increase of 6 million dollars, chiefly in shipments to Canada, South America, Mexico, the West Indies, Japan, and other oriental countries, in several of which railway development is proceeding at a rapid rate. Machinery also showed an increase in 1905 of more than 6 million dollars over 1904. A conspicuous feature, however, is the large increase in exports of locomotives to Japan, 151 engines having been sent thither in 1905, as against 74 in the previous year. Mexico and Argentina increased their purchases of American sewing machines, while Japan increased her purchases of electrical machinery and builders' hardware, each in a substantial degree.

Copper manufactures, consisting largely of pigs and bars, form the item of second importance in our exports of manufactures, the total being $86,225,291 in 1905, as compared with $57,142,081 in the preceding year. This growth of practically 30 million dollars in a single year is accounted for by an increase of nearly 10 millions in exports to China, 3 millions to the United Kingdom, 1½ millions to France, 3 millions to Germany, 4½ millions to Netherlands, 1¼ millions to Russia, and nearly 2 millions to other countries.

Refined mineral oil ranks third in the exports of manufactures, the total being $71,888,317, as against $71,753,552 in the preceding year. Owing to the fall in price, the value remained practically stationary, despite the fact that the quantity increased from 847 million gallons in 1904 to 951 millions in 1905. The countries to which the largest exportations were made were United Kingdom, 221 million gallons; Germany, 142 millions; Netherlands, 117 millions; China, 90 millions; Belgium, 46 millions; British East Indies and Japan, each about 30 millions; Italy, nearly 29 millions, and France, 27⅔ millions. South America, as a whole, took about 55 million gallons.

Cotton manufactures present one of the striking features of the year's export record, having advanced from $22,403,713 in 1904 to $49,666,080 in the year just ended. The growth occurred chiefly in cotton-cloth exports, $14,696,199 being the total in 1904 and $41,320,542 the figure for 1905. To China there was an increase of about 400 million yards over last year's exportation of 76.9 millions, and the value of our cotton-cloth exports to that country increased from 4 million dollars in 1904 to 27¾ millions in 1905. Japan was the only other country to show a considerable increase in takings

from us, the total being 16 million yards, valued at 1⅛ million dollars, as against less than 440,000 yards in 1904, valued at 55 thousand dollars.

Leather and manufactures of leather, fourth in importance in the list of manufactured articles exported, showed an increase of 4 million dollars, the total in 1905 having been 38 million dollars, as compared with 34 millions in the preceding year. In this class, also, Japan should be credited with the chief increase. To Japan we exported 16 million pounds of sole leather, valued at $4,146,428, as against 2 million pounds, with a valuation of about a half million dollars, in the preceding year. The increase in boots and shoes is principally in exports to the West Indies and Mexico, each of those countries being credited with about $400,000 in excess of the 1904 figures, while the total increase in boot and shoe exports to all countries was but little over $818,000.

Other important articles exported were: Agricultural implements, 20¾ million dollars; chemicals, drugs, dyes, etc., nearly 16 millions; wood manufactures, 12½ millions; cars, carriages, and vehicles, 10⅔ millions; scientific instruments, 8 millions; paper and manufactures of paper, 8¼ millions; paraffin and paraffin wax, 7¾ millions; fiber manufactures, 6¾ millions; tobacco manufactures, 5⅔ millions; books, maps, etc., nearly 5 millions, and india-rubber manufactures, 4¾ millions.

STATISTICS OF CITIES

THE Bureau of the Census has just issued a very useful report, Bulletin 20, presenting statistics of cities having a population of over 25,000. This bulletin contains comparatively few statistics relating to the population living in these cities, but is for the most part a compilation of data relative to the resources, transactions, plant, and machinery of the municipal corporations.

One finds in these tables such facts as the length (in miles) and the area (in square yards) of the paved streets classified with reference to kind of paving; miles of sewer; number of street lamps; miles of street railway track; number of school buildings and number of teachers and pupils; the number of public libraries with the number of volumes they contain; the number of almshouses and orphan asylums with the number of inmates; the number of policemen and the number of arrests they have made; the number of firemen and fire engines, the number of fires occurring during the year, and property loss from such fires; the number of marriages recorded in the office of the city or county clerk and likewise the number of divorces. There are also tables showing the total population of each city, and the deaths and death rates from each of the principal causes of death.

But by far the greater part of the tabular matter consists of financial statistics presenting the expenditures and receipts of each city classified by departments and offices, the public debt, sinking funds, etc. By reference to these tables one may readily compare the cost of government and of the several departments of government in different cities.

In the aggregate the financial transactions of the 175 cities included in this report equal in magnitude those of the national government. The total corporate receipts for these cities amounted to $541,624,203, while the revenues of the United States government in the fiscal year 1904, exclusive of postal revenues, were $540,631,749. The total corporate expenditures of the cities were $535,804,200; the expenditures of the United States government were $582,402,321. The national debt in 1904 amounted to $895,157,410; the aggregate debt of the 175 cities, exclusive of sinking fund assets, was $1,134,578,783. The receipts, expenditures, and debt for the city of New York represent about one-third of the city totals.

THE COMMERCIAL VALUATION OF RAILWAY OPERATING PROPERTY IN THE UNITED STATES

THE United States Bureau of the Census has just published Bulletin 21, presenting the results of an extended inquiry in regard to the commercial value of railway operating property in the United States. This inquiry was conducted by the Bureau of the Census, with the coöperation of the Interstate Commerce Commission,

STATE, TERRITORY, OR DISTRICT.	Commercial value of railway operating property as of June 30, 1904.	Per cent of total for United States.	Rank of state.	LATEST REPORTED VALUE AS ASSESSED FOR PURPOSES OF TAXATION.		Ratio of assessed to commercial value (per cent).
				Date.	Amount.	
United States	*$11,244,852,000	100.000				
Alabama	150,211,000	1.336	24	1905	$53,926,020	35.9
Alaska	100,000	0.001	51			
Arizona	68,356,000	0.608	44	1904	6,667,349	9.7
Arkansas	124,626,000	1.109	27	1904	34,709,023	27.8
California	350,694,000	3.119	8	1904	92,378,550	26.3
Colorado	198 261.000	1.764	19	Dec. 31, 1903	49,492,135	25.0
Connecticut	105,369,000	0.937	32	Sept. 30, 1904	120,493,648	114.4
Delaware	17,285,000	0.154	49			
District of Columbia	5,578,000	0.049	50	June 30, 1904	2,486,024	44.6
Florida	80,467,000	0.716	37	1904	21,817,478	27.1
Georgia	156,603,000	1.392	22	1903	63,105,810	40.3
Idaho	91,877,000	0.817	34	1904	10,115,378	11.0
Illinois	805,057,000	7.159	3	1904	425,709,055	63.8
Indian Territory	79.405,000	0.706	40			
Indiana	375.541,000	3.340	6	1904	165,863,367	44.2
Iowa	344,847.000	3.067	9	Jan. 1, 1904	57,535,160	16.7
Kansas	356,356,000	3.159	7	1904	60,093,534	16.9
Kentucky	155,772,000	1.385	23	1904	77,658,040	49.9
Louisiana	123,401.000	1.097	28	1904	29,044,195	28.9
Maine	80,146,000	0.713	38			
Maryland	132,342,000	1.177	25			
Massachusetts	250,052,000	2 224	15			
Michigan	277,597.000	2.469	13	June 30, 1904	196,795,000	70.9
Minnesota	466,734,000	4.151	5			
Mississippi	107 884,000	0.959	31	1902	29,847,640	27.7
Missouri	309,768,000	2.755	11	June 1, 1903	97,916,869	31.6
Montana	196, 09,000	1.745	20	1904	36,759,827	18.7
Nebraska	263,170,000	2.340	14	1904	46,082,853	18.5
Nevada	43.745,000	0.389	46	1904	13,778,049	31.5
New Hampshire	79.786,000	0.709	39	1904	22,625,000	28.3
New Jersey	*333,568,000	2.966	10	1904	231,655,525	69 5
New Mexico	86,400,000	0.768	36	1904	8,511,538	9.9
New York	*898,222,000	7.988	2	1903	229,582,064	25.6
North Carolina	113,146,000	1.006	30	1904	69,480,974	61.4
North Dakota	123 390,000	1.097	29	1904	22,160,304	18.0
Ohio	689,797,000	6.134	4	1901	133,858,945	19.4
Oklahoma	78,668,000	0.700	41	1905	11,936,317	15.2
Oregon	75,661,000	0.673	42			
Pennsylvania	1,420,608,000	12.633	1			
Rhode Island	25,719,000	0.229	48	1904	15,832,003	61.6
South Carolina	75,500,000	0.671	43	1903	29,467,716	39.0
South Dakota	49,646,000	0.441	45	1904	14,.54,930	28.9
Tennessee	131,166,000	1.167	26	1903	58,535,566	46.6
Texas	237,718,000	2.114	16	1904	95,209,785	40.0
Utah	90,325,000	0.803	35	1904	20,682,461	22.9
Vermont	37,311,000	0 332	47	Dec., 1902	27,344,020	73.3
Virginia	211,315,000	1.879	17	June 30, 1904	63,269,023	37.7
Washington	182.837,000	1.626	21	1904	26,066,949	14.3
West Virginia	201,799,000	1.795	18	1904	28,771,358	14.2
Wisconsin	284,510,000	2,530	12	1904	218,024,900	76.6
Wyoming	100,307,000	0.892	33	1904	7,498,232	7.5

*Exclusive of Jersey City ferries of the Pennsylvania Railroad system. The value of this ferry property is 5,698,000.

under the supervision of Prof. Henry C. Adams, statistician to that Commission. The first part of the bulletin, discussing the main results of the investigation, was written by Professor Adams. The second part, or "Supplement," consists of a series of papers by experts considering "Various Aspects of the Question of Railway Valuation."

The commercial value of railway operating property in the United States, computed for the year 1904, was $11,244,852,000. The apportionment of this value among the various states and territories of the Union (foreign possessions excluded) may be seen from the table on the preceding page.

The above valuation does not include the value of Pullman cars or private cars. The physical value of this equipment, that is to say, its value independent of the commercial use to which it is put, is estimated as follows:

Pullman cars	$51,000,000
Private cars	72,000,000

The total number of Pullman cars "available for the business of the company" on July 31, 1904, was as follows:

Standard cars with sleeping accommodations	2,903
Ordinary, or tourist, cars with sleeping accommodations	547
Parlor cars	464
Composite, dining, and other cars	85
Total	3,999

By commercial value is meant the market value. The two chief factors determining the market value of railway property are the expectation of income arising from the use of the property and the strategic significance of the property.

The value submitted was determined not with a view to discovering a proper purchase price for the railways of the United States, nor as a basis for taxing these railway properties, but as one step in ascertaining for the Census Bureau the total wealth of the United States.

Whether or not the value ($11,244,852,000) above submitted represents the value upon which the railways of the United States might properly be taxed depends upon whether the state undertakes to tax the roads at their full commercial value, including the values of both tangible and intangible property, or whether it seeks to confine its taxation to the value of the tangible property alone. In the former case the value submitted is believed to be substantially correct so far as it concerns the operating properties of the railways; in the latter case it is too high.

The results of the investigation reported in this bulletin have been carefully tested, and it is believed that the methods employed conform closely to those followed in the business world.

THE ZIEGLER POLAR EXPEDITION

THE loss of their ship, with most of their stores and equipment, almost at the beginning of their Arctic campaign, was mainly responsible for the modest achievements of the Ziegler Polar Expedition of 1903–1905. The party did not get farther north than 82° 13′, which is some degrees south of Abruzzi's record, but they did considerable surveying and conducted scientific observations of value. On the arrival of the expedition in Norway, Commander Fiala issued the following statement:

"Our rescue was most timely. By my order the *America* wintered in Teplitz Bay, where early in the winter of 1903–4 the ship was crushed in the ice and became a total loss, together with big quantities of coal and provisions.

"Supplies of stores left at Franz Josef Land by various relief parties saved us very serious privations. Three attempts to reach a high latitude failed. The scientific work, however, as planned, was successfully carried out by Mr Wm. J. Peters, of the United States Geological Survey.

"Our rescue was due to the splendid

efforts of Mr William S. Champ, secretary of the late William Ziegler, commanding the relief expedition, who, owing to the terrible weather, failed to reach us last year, and to the untiring zeal of Captain Kjeldsen and his Norwegian officers and crew, who for six weeks persistently forced their way through solid floes of ice and finally reached us.

"An abundance of stores had been left in the Franz Josef Archipelago by the expedition commanded by the Duke of Abruzzi and the André relief expedition, so that we did not suffer serious difficulties on that score."

In the spring of 1904 repeated attempts were made eastward and westward to force a passage to the Pole. The conditions, however, were insurmountable. The expedition found much open water, and day after day encountered fresh dangers and difficulties. Ultimately the supply of provisions ran short and a painful journey southward was begun, the members of the expedition finally reaching the depots at Cape Flora, Cape Dillon, and Camp Ziegler, among which they were distributed and where they managed to eke out the limited supplies by catches of walrus and bear.

The relations between the members of the expedition were most cordial and all took turns at duty, doing the hard work willingly.

Mr W. J. Peters, second in command, and who had charge of the scientific work, under the direction of the National Geographic Society, has cabled the following report to Dr Willis L. Moore, Chief of U. S. Weather Bureau and President of National Geographic Society: "No record. Conditions unfavorable. Considerable scientific work."

Mr Champ, leader of the relief expedition which sailed from Tromsö June 14 on the *Terra Nova*, deserves much credit for bringing back the party. The ice was unusually thick the past summer, and a less courageous man would have failed to get through.

On July 29 the *Terra Nova* reached Cape Dillon, and found six members of the Ziegler expedition safe and well. From this outpost sleds were dispatched to notify Mr Fiala at the headquarters camp of the arrival of the rescue ship.

The *Terra Nova* reached Cape Flora July 30, and found more members of the expedition. These had become weakened by the hardships they had endured, and some of them were so ill that they could not have held out for another winter.

Returning to Cape Dillon, Mr Champ organized a sled party and started for the headquarters camp, from which he brought back Mr Fiala and his comrades.

The *Terra Nova* sailed for home August 1. It got out of the ice pack August 6, and returned in excellent condition, arriving in Tromsö August 11.

THE HIGHEST DAM IN THE WORLD

THE U. S. Geological Survey announces that the town of Roosevelt, Arizona, humming as it is with the activities of its 3,000 inhabitants, is doomed. Its lease on life is only three years long. In 1908, when the engineers of the Reclamation Service shall have completed the highest dam in the world, Roosevelt will lie 172 feet below the surface of the water in the reclamation reservoir. Work has been in progress there for about a year, but men are laboring now, night and day, in three shifts of eight hours each, in order that no more than three additional years may be consumed in the task Then the town of Roosevelt will disappear, and in its stead 250,000 acres of now barren land near Phœnix will be reclaimed and give rich support to many more people than Roosevelt now contains. Lest the sweeping away of the 3,000 people should appear too se-

vere, it should be explained that Roosevelt is in reality a camp; that practically all of its inhabitants are gathered to help along the gigantic Salt River Reclamation project, which will cost over $3,000,000. The engineering problems connected with the work are great. Before the dam could be commenced 80 miles of road had to be constructed. Most of the material has to be brought from Globe, the railway station, which is 40 miles away. The power canal, which is to be 19 miles long, is well under way. Its construction has involved the excavation of about 600,000 cubic yards of material and the driving of nearly 9,000 feet of tunnel. The canal will furnish power to generate electricity to operate all the works.

The government will make on the spot all the cement required, instead of purchasing it. It is expected that about 200,000 barrels of cement will be required in the construction of the Roosevelt dam, the power canal, and the various Tonto improvements. The cement used in the preliminary work cost $5.35 a barrel, delivered at the point where it was used. Bids were later received for furnishing cement at $4.81 a barrel. It will cost the government $1.60 a barrel to make the cement on the ground. If the cost of the plant, $120,000, be added to the cost of the 200,000 barrels of cement required, the total cost of the government cement will still be only $2.20 a barrel. This means a saving of $2.61 a barrel, or a saving of $522,000 on the entire work. After the dam and canals have been completed the cement plant will still be capable of further use, and considerable salvage may doubtless be realized. The cement mill is now in operation. The fuel used in burning cement in the kilns is crude petroleum from the California oil fields.

Map of Panama Canal.—In the October number THE NATIONAL GEOGRAPHIC MAGAZINE will publish as a supplement a map of the Panama Canal region, 24 by 33 inches and in five colors. The map was prepared by the Isthmian Canal Commission and is republished through the courtesy of Hon. Theodore P. Shonts, chairman of the commission.

IMPROVEMENTS IN THE REPUBLIC OF PANAMA

UNITED STATES Consul General Joseph W. J. Lee, Panama City, Panama, reports that the natural resources of the Republic of Panama are but little known to the world at large, the interest in the monumental project of a transisthmian canal overshadowing them. The work of the Panama government in opening the country and facilitating the exploitation of its resources by extended improvements in transportation and communication has not been advertised as fully as warranted by present accomplishment and expected results. Harbors, highways, and railways and a new city are among the projects to which President Amador has given his approval and upon which work is in progress. At present the central provinces of Los Santos, Cocle, and Veraguas are the fields for the greater part of these improvements, for which $1,050,000 (silver) have been appropriated.

The harbors of Pescaderias and Puerto Posada are to be improved, so that it will be possible for passengers and cargo to be received and landed at wharves. With the exception of Panama City, the port of Agua Dulce is at this time the only harbor on the Pacific where it is possible for vessels to discharge and load from piers.

The project is to construct first good roads and later railways, stretching across the plains and foothills, through the mountain passes, to the Atlantic, and thus develop rich natural resources which today lie dormant.

Gold mines long ago abandoned have

recently been relocated and are now worked with profit. The crude methods of the Spaniards were only successful where the mineral veins were most accessible. The results obtained by the use of modern facilities will surpass those of the original discoverers. Because of the lack of transportation facilities, coal and iron have lain undisturbed in the flanks of the hills. A large area of fine woods will become accessible when better communication is established. Cocoanuts, coffee, and rubber grow wild in luxuriance.

At the base of the hills rolling plains suitable for grazing large herds of cattle stretch for miles. Flourishing plantations and ranches covered this country until abandoned because of a series of disastrous revolutions. Now, secure of protection and peace and bettered by means of communication, the introduction of capital is certain to be followed by most satisfactory results.

The Panama government has appointed Vincent Peterson, an American engineer, to take charge of the development of the interior provinces. Mr Peterson has had much experience in mining, railway, and municipal engineering in the United States and Mexico. Last November he came to Panama as assistant engineer to the minister of public works. He has organized the engineering corps of the Republic and surveyed the boundary line between the Canal Zone and the country in the vicinity of Panama. No government undertaking has ever meant so much to the interior of this Republic, whose isolated dwellers are now about to profit by the rich advantages at their command.

The improvements to the harbor of Puerto Posada and the highway between that place and Penonomé are under way. Basket and rope making and the manufacture of genuine Panama hats are carried on in this vicinity. The port of Posada will serve as an outlet for the products of these industries. On the far side of Penonomé the highway will be continued through mountain passes and over the hills to the Atlantic.

From the port of Agua Dulce to the city of the same name the highway, with its necessary grades and bridges, is practically completed. This route will be further continued beyond Agua Dulce to the Santa Maria River. The river is to be spanned by an extensive steel bridge, the contract for which has been allotted to an American bridge company. Beyond the far side of the Santa Maria River the route divides, one branch leading to Chitré, capital of the province of Los Santos, and the other leading toward Santiago, capital of the province of Veraguas. Preliminary surveys of these routes are practically completed. Still another highway will connect Antom (or Pescaderias) with Agua Dulce, passing through Náta and Pócri and crossing the route which joins Puerto Posada and Penonomé, thereby opening the surrounding country to the influence of commerce and industry.

All these national roads are to be 50 feet wide, and the highways, as well as all bridges upon them, are to be built with a view to the practicability of paralleling them with narrow gauge railways.

Midway between Agua Dulce and Penonomé a site for a model town has been planned. A public plaza, 460 feet square, is to be the center of the town, and around it will be grouped a church, school, government and municipal buildings, and a market. This town will be provided with a complete system of waterworks, electric lights, sewerage, and drainage. Plans for these works are open for competition. All the necessary preliminaries have been approved by the President of the Republic.

The Philippine Islands. Edited by Emma Helen Blair and James Alexander Robertson. Vol. XXIV, pp. 340; Vol. XXV, pp. 322. Cleveland, Ohio: Arthur H. Clark Co. 1905.

In these two volumes we have the conclusion of Medina's early Augustinian history and a survey of affairs generally in the Philippines for 1630–1636. It is, of course, all original material translated into English, the Spanish text not being given. There are enough notes to explain the most important points. With the present rise of Japan into world politics it is very significant to note the friction at that early period between the governments of these two archipelagoes. A considerable part of these pages deals with church quarrels, and Medina gives numerous biographies of ecclesiastics. Religious zeal is very apparent, just as in other Asiatic lands today, as there are constant calls for more missionaries. The volumes are up to the high level of the previous ones as to paper, print, and binding. C. M.

Antarctica. By Otto Nordenskjold and J. G. Anderson. With many illustrations and maps. Pp. 608. 6½ x 9 inches. New York: The Macmillan Co. 1905.

This is a perfunctory and uninteresting description of life in Antarctic regions. The expedition of which the book is a narrative followed beaten tracks and accomplished little that is new. Beyond the fact that some brave men incurred danger and passed a winter in a hut about 9 by 6 feet, there is really no reason for the existence of the book. The illustrations are lifeless and poorly printed.

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WE have published a new edition of our map of Alaska, which was prepared by the United States Geological Survey. The map is 36 by 42 inches, in 3 colors, and is the first contour map of Alaska that has been made. : : : : By mail, 25 cents.

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